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ABSTRACT

This manual is designed to help elementary school teachers create games and equipment for use in physical education activities. It suggests items to acquire (cartons, string, plastic jugs, cardboard tubes) and places to look for them. It describes how such items can be used and how to construct some common gym class accessories. There are also ideas for nonstandard activities that utilize "found" objects such as paper plates, inner tubes, bushel baskets, and fixed horizontal poles in the school parking lot. Games and activities are described that utilize the homemade, classroom-constructed equipment. Diagrams and directions are given for constructing volleyball net and standards, stilts, parallel bars, ladders, badminton racquets, etc. There are suggestions for muscle building exercises and contests. The last ten pages are composed of detailed diagrams of constructed athletic equipment. (Author/JD)

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"HOMEMADE" EQUIPMENT THAT CAN BE USED IN
TEACHING PHYSICAL EDUCATION CLASSES

U.S. DEPARTMENT OF HEALTH,
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Kermit R. Davis

SP010 719

CONSTRUCTING YOUR OWN PHYSICAL EDUCATION EQUIPMENT

Often times the elementary school teacher is not blessed with an excessive amount of physical education equipment. You must either be very creative and construct much of your own equipment or do without and thereby deprive your children of the value of a good physical activity program. Below are a few ideas to help you as you create your own games and equipment.

I. Places to "LOOK" for materials for the construction of physical education equipment.

1. From a GROCERY STORE you can get such things as:

- A. Boxes
- B. Bags
- C. String
- D. Empty bottle crates
- E. Plastic jugs, bottles, etc.
- F. Bottle caps
- G. Beans or seeds (packages that have been damaged or that weevils have invaded)
- H. Damaged paint, brooms, etc.
- I. Outdated display signs (cowboys, clowns, spacemen)

-- can you think of others?

2. LOCAL INDUSTRIES are an excellent source for all kinds of damaged or used equipment that you can get often times free.

3. How about the SCHOOL LUNCHROOM?

- A. Boxes
- B. Bags
- C. Large cans or pails
- D. Milk cartons
- E. Fruit crates
- F. Cardboard tubes

-- etc.

4. Or the HARDWARE STORE

- A. Old wire
- B. Old string or rope
- C. Damaged materials such as
 - paints
 - canvas
 - lumber, etc.

5. ARMY SURPLUS STORES may have many items that you can get very inexpensively such as:

- A. Parachutes
- B. Cargo nets
- C. Foot lockers for storage, etc.

6. FREIGHT LINE COMPANIES are very good people to know. Often they have materials that are damaged in shipment and are sold at a very low price.

II. The following is a partial list, by no means complete, of some common items that you can secure free or inexpensively and some of the things that you can use them for:

1. Plastic bottles and jugs (those with handles).
 - A. Fill with sand and use for weight lifting.
 - B. Place them on a belt and use them as a life jacket when teaching beginning swimming.
 - C. Cut at an angle and use as a scoop or shovel.
 - D. Cut off top to store marbles, etc., in.
 - E. Put a cup of sand in bottom and use as bowling pins.
 - F. _____ and others.
2. Broom handles
 - A. Wands
 - B. Batons
 - C. Riding horses
 - D. Line markers
 - E. Bats
 - F. Hockey sticks
 - G. Jump rope handles
 - H. Staffs for flags
3. Plastic hose
 - A. Hula hoops
 - B. Jump rope handles
 - C. Batons
 - D. Quoits
 - E. Tug-o-war
 - F. Line markers
 - G. Substitute rope for rope games
4. Ropes
 - A. Jump ropes
 - B. Line and boundary markers
 - C. Substitute net for volleyball, badminton, etc.
 - D. High jump bar
 - E. Quoits
 - F. Tug-o-war and many jumping games.
5. Tires
 - A. Hurdles
 - B. Targets to throw at
 - C. Obstacles to run around or through
 - D. Walk on for balance

III. How to construct some common items of equipment.

1. Relay batons
 - A. Roll up a magazine or newspaper and tape it with heavy tape
 - B. Use a ruler
 - C. 12 inch section of garden hose

- D. 12 inch section of broom handle
 - E. 12 inch section of cane pole
 - F. Cardboard tube from a roll of paper
2. Bean bags -- cut a piece of cloth (heavy canvas is best) into a 4" x 12" strip. Fold and sew up the two six inch sides. Bake seeds in hot oven to prevent sprouting should the bean bag become wet. Place the beans in the bag and sew up the top.

For small children, be creative and make the bags in the shape of animals or make the bags very colorful.

3. Jump ropes -- Cut any desired length from a small rope. Make handles from 6" sections of garden hose or from a broom handle with a hole drilled through the center. Insert the rope through the handle and tie a knot in the end to prevent it from coming out.
4. Rhythm instruments
- A. Hit two sticks together
 - B. Fill a soft drink can with a few small pebbles and put a piece of tape over the opening
5. Bases
- A. Burlap bags -- easy to use -- fill half way with sawdust, pine straw, or other soft material. Fold top under for temporary base and save the sack for other use.
 - B. Using canvas or other heavy cloth, construct similar to bean bag (but much larger) and stuff with cotton, rags, hay, pine straw, etc. To prevent the base from lumping up use some heavy string and stitch across the bag about 4" apart.

NOTE -- Do not use tires, bricks or stones as bases! They are easy to stumble on and may be hazardous on the playground.

HOW TO BUILD A STANDARD AND NET

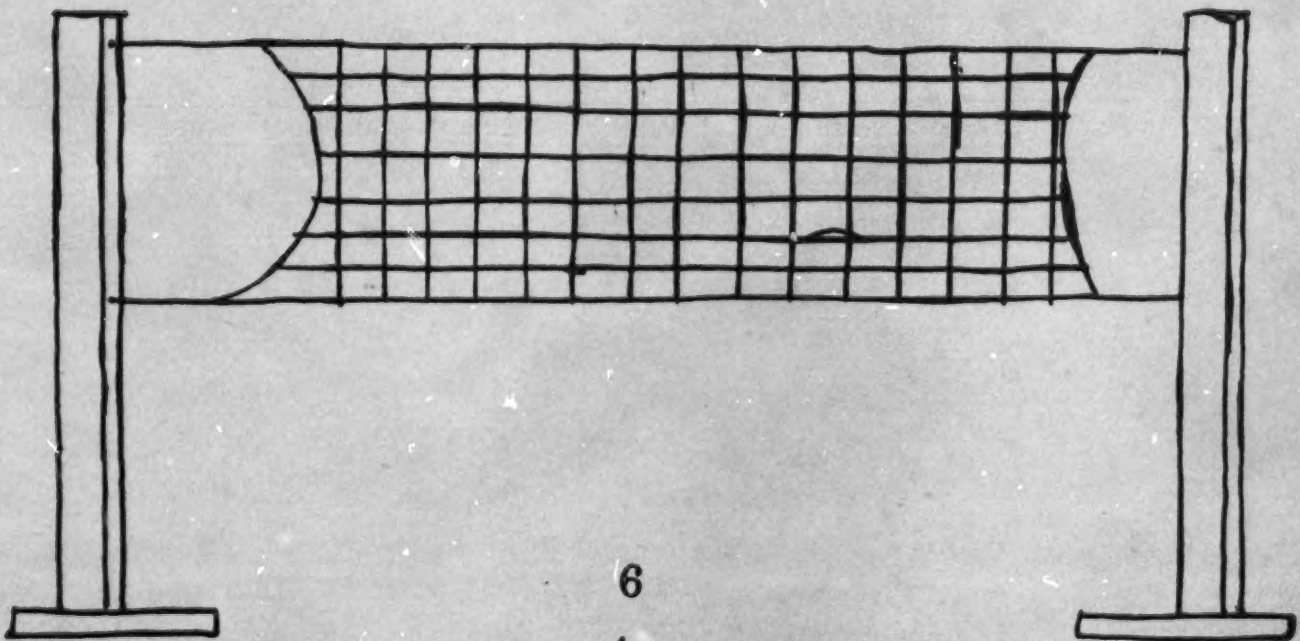
Materials needed:

- a. two 2 x 4's, 7 ft. tall
- b. three onion sacks
- c. small pieces of wire
- d. 12 feet of sturdy string or rope
- e. eight 2 x 1's, 3 ft. long
- f. nails
- g. four screws with hooks

Construction: Build a base for each 2 x 4 by nailing a board on two opposite sides and then take two more 2 x 1's and nail them by connecting the ends of the other 2 x 1's. Next put two screws on each standard putting them about two feet apart placing the first one at the top of the standard. Cut the sides of the onion sacks so that you can use the sack as two. Finally wire the sacks together and connect the rope to the ends.

Activities:

- a. volleyball
- b. badminton
- c. aerial tennis
- d. cageball



STILTS

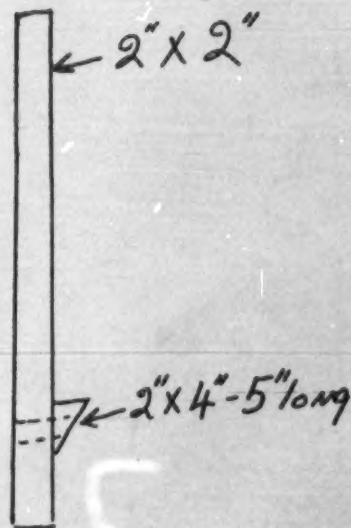
2 - two by two's, 5 feet long to 10' long.

2 - two by four's, 4 inches long

6 - bridge nails

paint

Nails
OR Bolts →



Nail the two by four's - 4 inches long, 15 inches high on one end of the two by two's, then plane off and paint.

Activities: King of the Mountain
Relays
Follow the Leader
Chase
Balance Activities

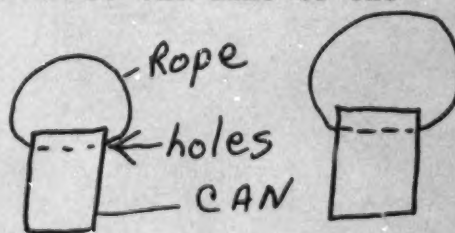
TOM WALKERS

2 - $\frac{1}{2}$ gallon juice cans or 2 lb.
coffee can

2 - ropes 4 feet long

With a can opener make two holes opposite each other, then two holes on each side under the first ones. Run each end of a rope through each side and tie at the end. Do the same to the other can.

Activities: Jump Rope
Follow the Leader
Rabbit Hop
Jump the Brook
Walk up Steps
Balance Activities
Relays





BALL GOAL

Directions -- One barrel is needed. The sizes of barrels available will vary greatly. Barrels may be obtained from dairies, grocery stores, factories, etc.

First, draw a circle in the front of the barrel, according to the size of the ball that will be used with the barrel. Be sure to draw the hole low enough to the bottom so that the ball will roll out freely. Cut the hole out with a knife or other cutting instrument. Paint, color, paste or draw a face on the front of the barrel around the hole.

Activities:

1. Players line up in two columns. Each team has a ball. The barrel is placed at a point a short distance in front of the lines. When the teacher says go, the first person in each line runs forward with the ball. When he is even with the barrel he throws the ball in. The ball is retrieved and passed to the second player in the line, until all players have gone. The team who finishes first with the most goals wins.

2. Players are divided into teams. Each team is given several balls (each ball has a different point value). Each player throws all the balls into the goal. The players keep in mind how many points they got. The team that gets 20 points first wins.

3. Players line up in columns. Each team has one barrel and one ball. Place the barrels against a wall some distance in front of the teams. Each player throws the ball so that it bounces on the wall before going into the barrel. The players continue to throw the ball until their ball goes in. The team who finishes first wins.

4. Players stand in a circle around the barrel. One player is IT and stands inside the circle, close to the barrel. The players have one ball. The players in the circle throw the ball and try to get it in the barrel, while the person who is IT tries to keep the ball from going in. If a player throws the ball and IT keeps it from going in, then the person is IT.

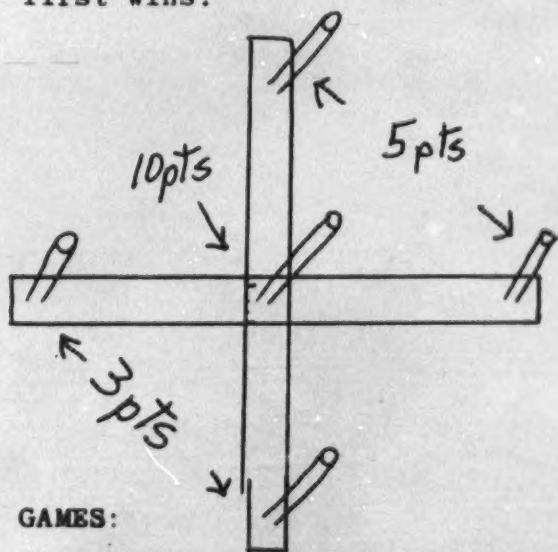
5. Pupils are lined up in columns with one ball and barrel for each. The barrels are placed a short distance in front of the lines. The players throw the ball so that it bounces 1 time before going into the barrel. One point is given each time a player gets a ball in. The team that gets 20 points first wins.

7. Pupils are arranged in a circle around the barrel. Each player has a bean bag or ball. The teacher gives commands such as: Throw to your left, right, over your head, etc. and the pupils respond by throwing the ball.

8. Players are lined up into columns with one ball and one barrel. The barrels are placed a short distance in front of the lines. The players throw the balls into the barrels, then the last player in each line moves the barrel back, etc. This aids the pupils in judging distance.

9. Players are arranged into columns. Each one having a ball and barrel. The pupils kick the ball through the hole in the front of the barrel. Each player continues to kick the ball until he gets it in the hole. The team that finishes first wins.

10. Players are lined up in columns with one ball and barrel. Each pupil rolls the ball in the hole in the front of the barrel. Each player continues until his ball goes in. The team who finishes first wins.



DEMENSIONS:

Two cross beams of 18 inches (2x4)
Five sticks 6 inches (broom handles)
Paint the base and the sticks bright colors
Number each of the sticks as to their point value

Variations: Sticks can be placed on a 15 by 20 inch board.

Bore holes with 1 inch brace & bit

GAMES:

1. Ring-toss game
2. Hang the game on the wall or any object off the floor and have the children throw to the hanging base
3. Toss in different positions: overhand, underhand, behind back, etc.
4. Divide into teams, the team with the most points wins
5. Use the rings for ring tag
6. If the sticks are removable, have a relay for the children to put them back into the base.
7. Use removable sticks for relay batons
8. Place four to eight students around the ring stand, pass the ring around like a hot potato; when the whistle blows, the student holding the ring must toss it to the middle. Team with the most points wins

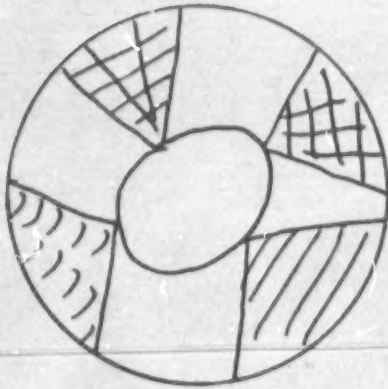


HURDLE

INSTRUCTIONS: Get a wooden fruit or vegetable case from the grocery store or make it from wood planks and nails into a box shape.

ACTIVITIES:

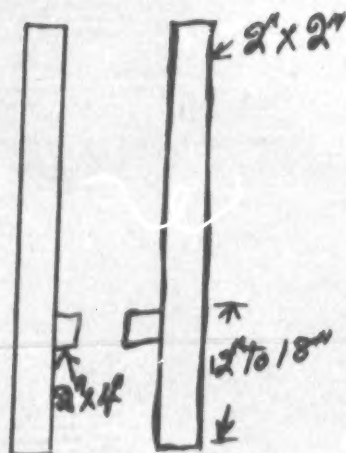
1. **Jumping Activities:** broad jump -- place one hurdle or two and have the students jump over them.
2. **Throwing Activities:** Stand the box upright and have the students throw the balls at it to knock it down.
3. **Bean Bag Activities:** Use it for a bean bag target.
4. **Creative Activities:** Use it instead of building blocks.
5. **Relay Activities:** Use it for relays -- like running to the hurdle, circling it and running back to a certain point.
6. **Hurdling Activities:** Place 3 hurdles 5 feet apart. Players straddle hops the first, does a flat-footed jump over the second, and leaps over the third, runs to turning line and returns in a straight line to his team.
7. **Ping Pong Activities:** Use three balls and in each group have 4-6 players. Each player in each line bounces all the ping pong balls into the box from a 10-foot line. Team scores are added together. The winner scores 25 points first.
8. **Running and Skating Activities:** Use for obstacles when running and skating
9. **Prop Activities:** Use to mark boundaries and bases in activities.



Instructions:

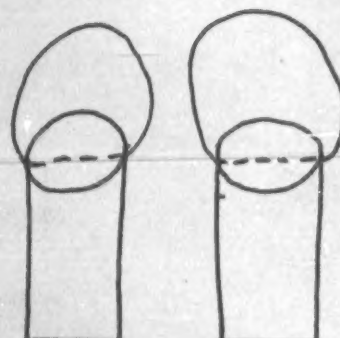
Find an old tire and paint it colorful for children. Stripes, dots, stars, etc.

1. Tie a tire up and throw bean bags or other objects through it while it is moving sideways.
2. Relay races with a tire having two or more teams competing against one another.
3. See how straight a line you can roll the tire in.
4. Stand in center of the tire, and see how fast you can get it up over your head and back down to the ground.
5. See who can climb through a line of tires the fastest.
6. Stand with feet together and jump from tire to tire.
7. Alternate feet with every tire you jump into.
8. Use the tire for bases in a ball game.
9. Run around a tire or group of tires as fast as you can.
10. Try to balance yourself while sitting on a tire.



STILTS TOM-WALKERS

string
or rope



2 medium size
cans

Stilts

Tom-Walkers

Instructions for making stilts and tom-walkers. Materials used.

1. Two 2" by 2" boards 5' long *To 10' long*
2. Two 2" by 4" boards 5" long.
3. Use 4 or 5 big nails to nail the 2" by 4" to the 2" by 2".
4. Paint the stilts to aid in preserving the wood and to add some color to the appearance. Since children love colors, bright ones should be used.

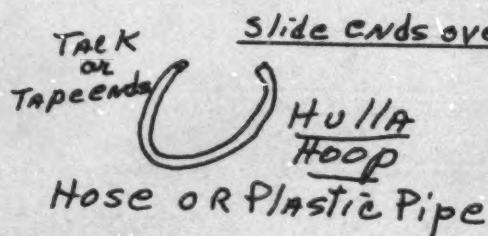
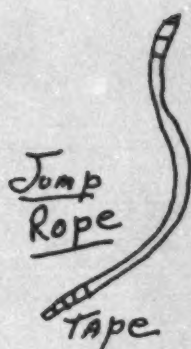
The instructions above are for the construction of stilts.

TOM-WALKERS

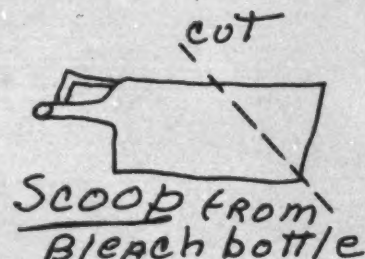
1. Two medium size cans that will support enough weight so they will not collapse.
2. Heavy string or rope.
3. Punch holes in the cans and run the strings through the holes. Tie strings so that they will stay in the cans.
4. Paint if desired.

Games and activities that can be played with the use of the stilts and tom-walkers.

1. Relays (stilts and tom-walkers)
2. Have students see who can walk the longest distance without falling. (stilts and tom-walkers)
3. See which student can stay up the longest while walking around the playground. (stilts and tom-walkers)
4. Using balance see which student can stay up the longest without moving.
5. Have races to determine which student is the fastest on stilts.
6. Have students walk backward for distance. (tom-walkers)



Slide ends over short stick



Hula hoop -- Take a piece of hose and tape the ends together.

Scoop -- This is a hard one! Take a bleach bottle and cut it at an angle.

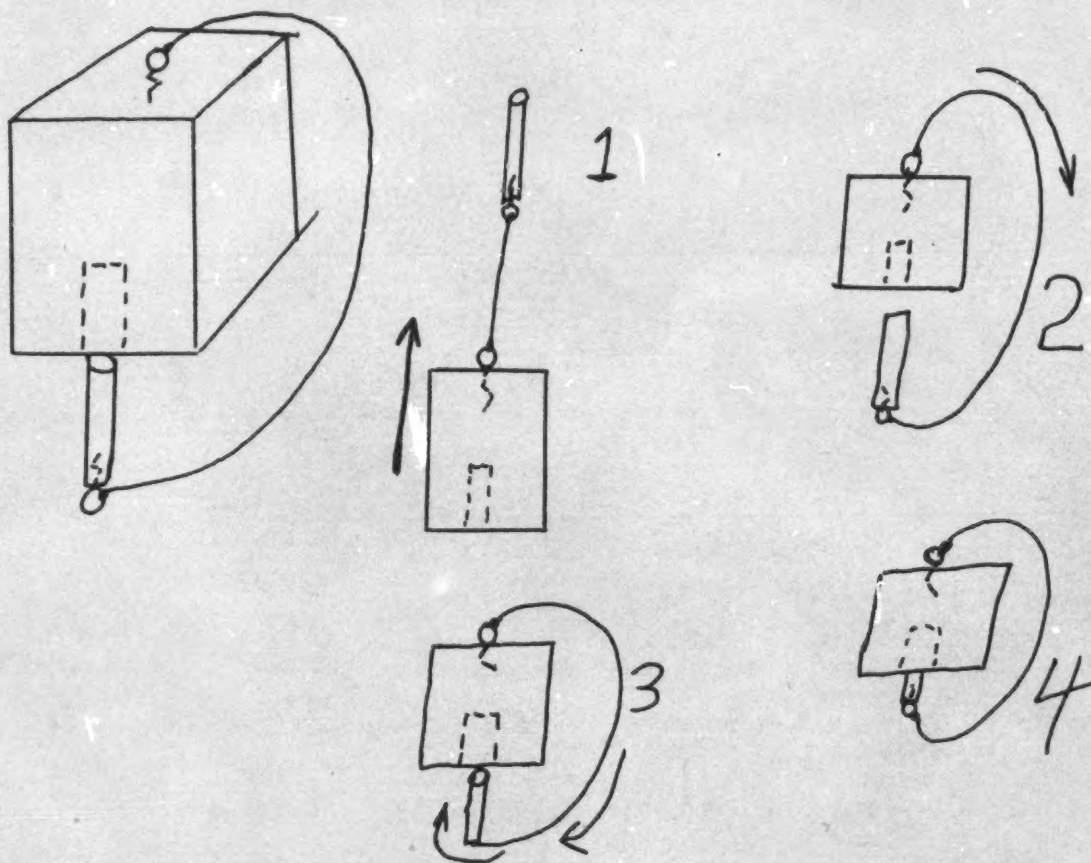
Jump rope -- This could be the hardest of all! Take a piece of rope and tape the ends.

Things to do with:

Hula hoop -- use it as a hula hoop, use it as a jump rope, play ring toss with it, roll it on the ground (propelled with a stick)

Scoop -- use it to scoop sand or gravel or stuff like that, use it to catch and throw a ball.

Jump rope -- play jump rope, do the limbo under it, use it in balance exercises.



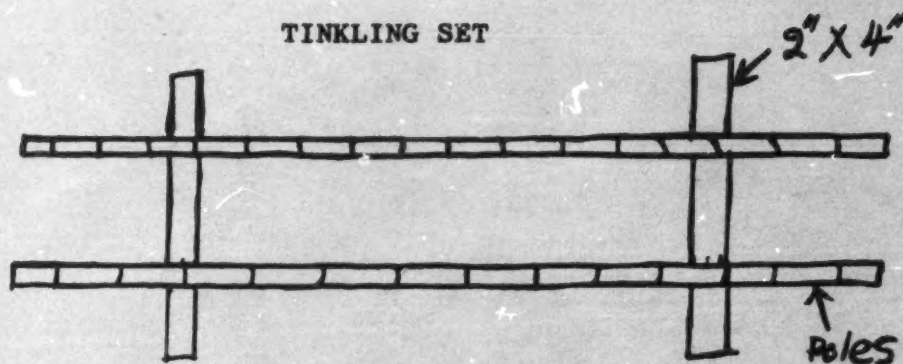
Materials: 2 eye bolts
Block of Wood
String
Dowel Rod

Construct as shown above and paint with
bright colors.

The object of the game is illustrated above.

TINKLING SET

Diagram:



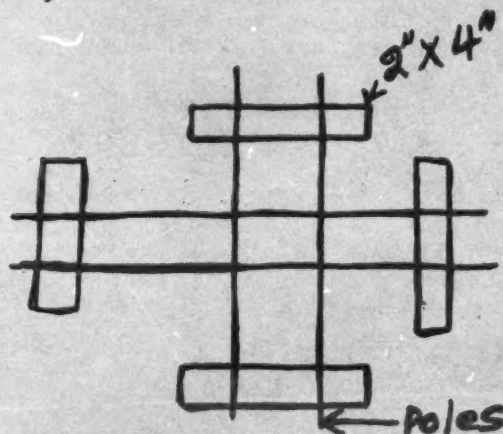
Poles may be constructed from fishing poles and long broom sticks or plastic pipe. You may also get poles from furniture stores that carpet has been rolled on.

Poles should be placed on small boards on each end to keep from hurting the hands.

Procedures: Manipulating the Poles. The children work in groups of 4. Two children manipulate the poles while the other two children dance. In manipulating the poles the children kneel, one at each end of the two 10 foot poles. The poles are lined up parallel on the floor two feet apart. The pole manipulators work the poles to the three count rhythm of the music: first, two beats (hit against the floor) and then one beat (hit sticks together in the air). The pole manipulators continue this regular rhythm, DOWN, DOWN, TOGETHER, through the dance.

ACTIVITIES: Dances
 Jumping over poles for height
 Use as rhythm instrument

Diagram:
 Using 2 sets of
 poles



The beat for two sets should be a four count rhythm
 Down, Down, Together
 Together!

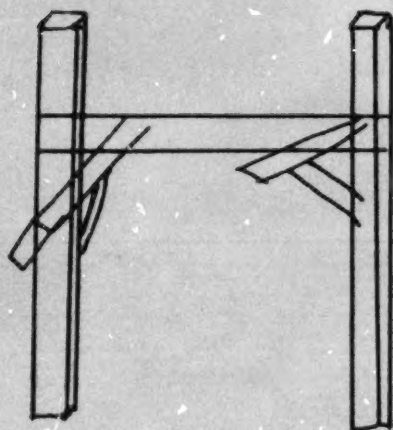
SELF MADE SUGGESTIONS FOR PHYSICAL EDUCATION

1. Milk cartons or empty plastic bottles from the cafeteria can be used for bowling pins, or Indian clubs. Local bowling alley may supply old bowling pins, which can be used for many games.
2. Old spindles or cones from a mill can be used for Indian clubs, etc.
3. Children can bring large tin cans or bushels for target tossing games in the classroom or on the playground. Be sure the can's edges are smooth.
4. Children may bring ears of dried corn and heavy cloth material for making bean bags in 6" squares.
5. Empty feed bags filled with straw, sand, or sawdust make ideal softball bases.
6. Paper plates can be used for marking play areas for running and tagging games.
7. Bottle caps can be used for target tossing games.
8. Jump the Shot - Rope inserted in old deflated ball. Ball is swung through circle of players who jump the ball or rope as it passes beneath them. (small bicycle tire can be used instead of the ball)
9. A piece of rope or clothes line will serve as a volleyball net when strips of white cloth are tied every few inches and permitted to dangle 3 or 4 feet.
10. Standards for nets can be constructed by closing one opening in an old tire with plywood, pouring the tire full of cement and inserting a metal pipe. By placing a horizontal spike through the pipe that is to be covered by cement, the standard will not work free.
11. Large tin cans make good tom-toms with pieces of an old inner tube stretched over the can and tied with shoe laces.
12. Bamboo hurdles or 5' fishing canes may be placed at different levels for running and jumping or over-under relays.
13. Old automobile tires or tubes may be used for relay races.
14. Ropes, tires, and halves of flat rubber balls are also methods for marking game boundaries without endangering the participants.

15. A shaker for marking boundaries may be made by using a number 10 can with holes in the bottom. A wooden handle approximately 30 inches long should be nailed to the can. The shaker should be filled with plus-5 marble dust.
16. Used telephone poles or curbing around the school parking area can be used for balance beams.
17. Strips of a cargo parachute canopy are ideal for making all types of nets and a long strip can be used for a class Tug-of-War with hand grips for everyone.
18. An 18 inch broom handle connected to a 5 pound weight by a 28" rope makes a terrific wrist and grip exerciser. Place your hands on broom handle with the rope between. Then roll the rope around the broom handle until the weight reaches the stick.
19. A bench makes an excellent 4 count exercise gadget.
 1. Step up
 2. Change feet (shift weight to other foot)
 3. Step down
 4. Change feet

(3 to 5 minutes of this exercise is a pretty good work out)
20. A tennis ball attached to a 10 ft. piece of elastic that has a five weight on the other and gives a person an opportunity to practice tennis by himself.
21. Two bicycle inner tubes linked together as you would rubber bands provide youngsters with a stretch tug-of-war.



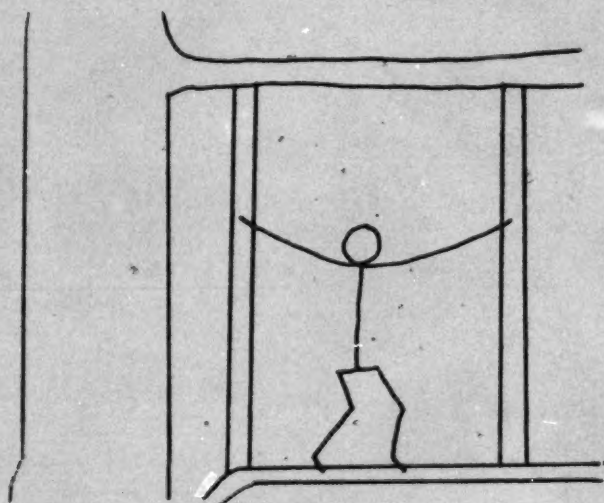


ARM AND SHOULDER DEVELOPMENT

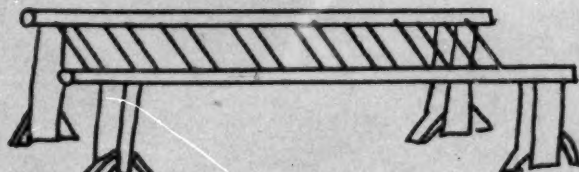
Short "parallels"
made of 2"x4"s.
Hang on wall for
elbow dips

Since many are needed to accomodate class, make "parallels" in different heights and widths for large and small pupils.

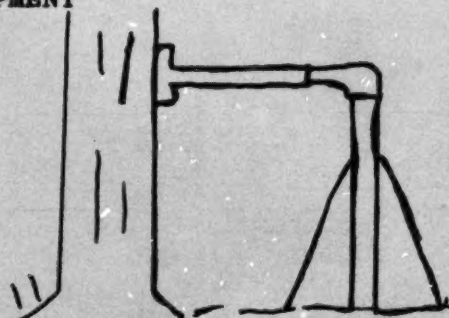
1. Climb one pole
2. Climb two poles (or pipes)



Horizontal Ladder--

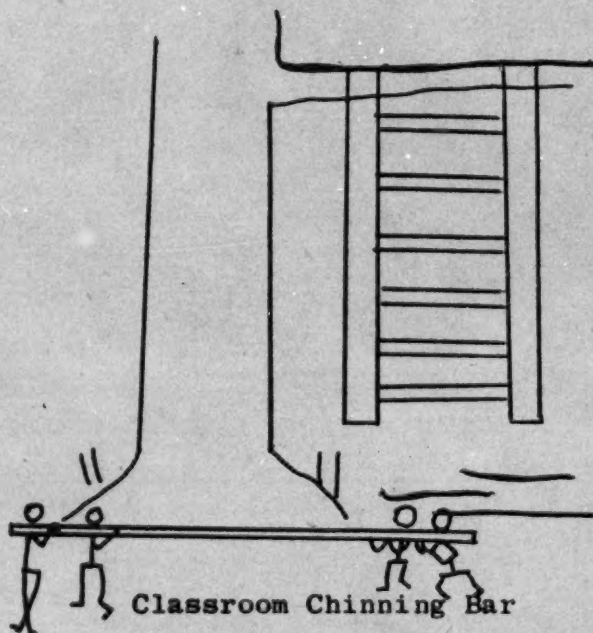


Use an ordinary ladder. Keep close to ground with low supports. If one end is attached to side of building, only two uprights will be needed. Hang another ladder obliquely to increase degree of difficulty.



A chinning bar (1" pipe) may be attached to tree with floor flange, 90" elbow, and vertical pipe set in ground supported by two guy wires.

Swinging Ladder--

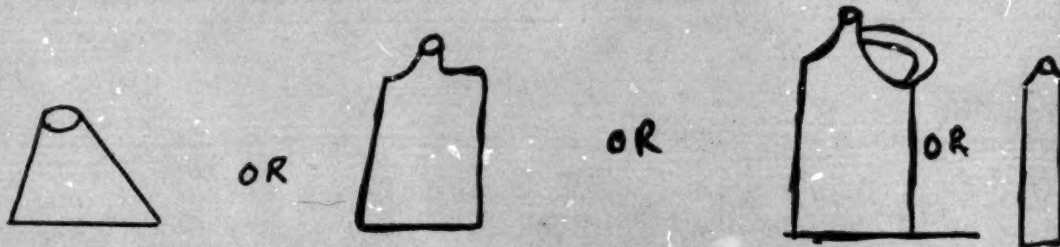


Classroom Chinning Bar

Two boys stand at each end of pipe or pole, resting it on their shoulders. Pole held in such position may be used by other pupils for chinning and low horizontal bar exercises.

Improvised Bowling Pins

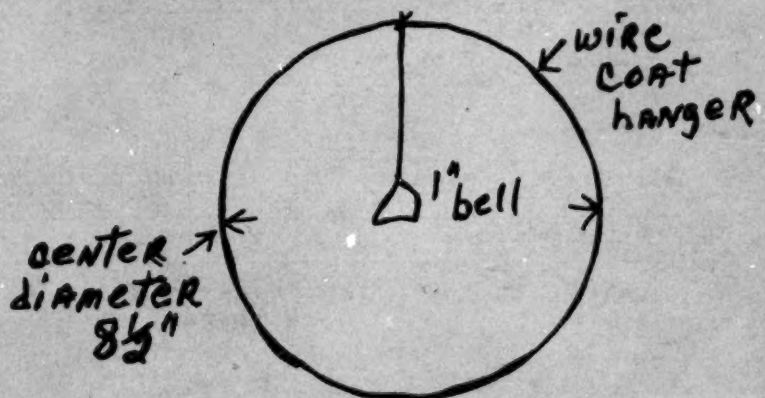
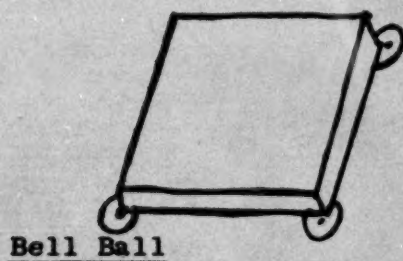
Materials: 10 empty milk cartons, conical shaped orange juice or root beer containers, or plastic dishwashing detergent bottles.



Gym Dolly

Pine lumber 2x12x12 inches, four 1½ inch casters.

Plate casters are screwed to each corner of board as shown in diagram.



Wire coat hanger

Center diameter

Ribbon, wire hanger and a small bell. Keep the hanger intact, spread out in a circle. Attach the bell with ribbon as shown.

Hang the wire circle from any good place so that it will be seven to eight feet from the floor. You may hang it in a doorway. This game is a target type dual game, where the players try to throw the ball through the hoop without hitting the bell. Five points if ball goes through without hitting the bell and one point if the ball hits the bell but goes through.

Low Balance Beam



A 10 foot length of 2x4 inch lumber and three cross members made from 2x6 inch lumber. With the 2 inch side up the beam is attached to the cross members by means of angle iron braces which are screwed on. This type of beam is usually used by students of elementary school as a self testing balance apparatus.

Homemade Mats

Old rugs and mattress covers.

How to make: Cut rugs to exactly fit the mattress cover. Six or seven thicknesses of rugging should be sufficient to provide enough shock absorbent material for apparatus. Tumbling stunts may also be practiced on these mats but should be kept simple. The covers are easily removed for washing when soiled.

Peg Board

Material: 2x6 inch and 2x10 inch lumber, thin wall aluminum pipe ($1\frac{1}{4}$ inch O.D.), lag screws and 2 inch wide strips of $\frac{1}{4}$ inch plywood or similar scrap wood.

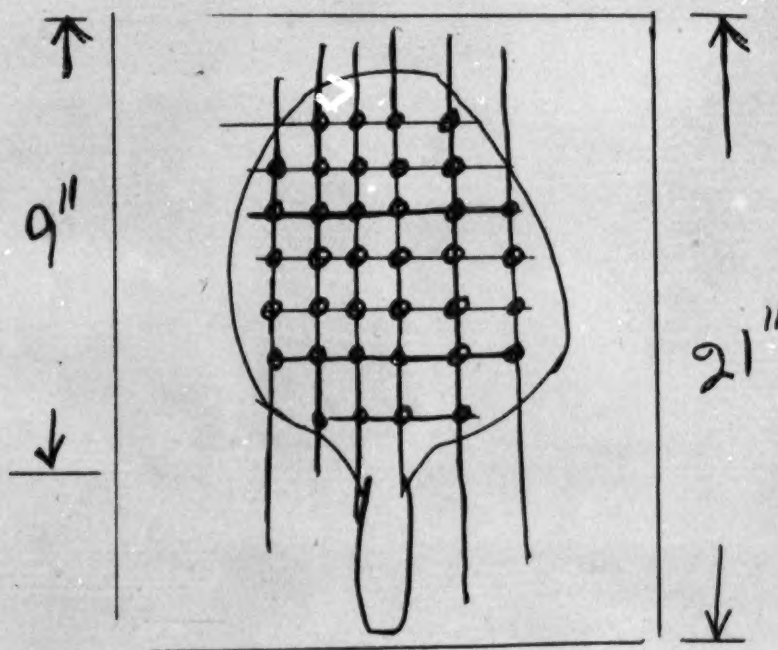
Construction: See the diagram for construction details. The 2x6 inch sleepers are mounted on the wall high enough so that the tallest pupil can hang from the lower holes without touching the floor. Before mounting the sleepers on the wall, four pieces of 2x10 inch lumber are fastened to them. Holes for the screws are predrilled through the sleepers into the back of the four pieces which are the main body of the board. Sixteen holes are drilled as shown in the diagram at a ten degree angle. The holes are drilled at an angle to provide a firm support for the performer while he hangs from the board. If the holes are drilled into a softwood such as pine or fir, the pipe holes are necessary to keep the lower part of the holes from wearing away. If the holes are drilled all the way through the boards, strips of $\frac{1}{4}$ inch scrap materials are screwed to the back of the boards, to cover these holes. This is to prevent the pegs from becoming stuck when the board is in use. Pegs may be made from baseball handles as shown in the diagram. A brass sleeve is fitted over the end. The sleeve is held in place with a washer and screw as shown. The board is painted and numbers are placed on the board under each hole.

USE: This apparatus is used as a motivating device for practicing exercises in which the muscles of the upper arms and shoulder girdle come into play. The performer hangs from two pegs which are inserted into the holes and then attempts to climb from one hole to another. Exercises range from the extremely easy to the very difficult. The board has been used with success at all levels. One of the easier exercises is a simple travel across and back on the four lower holes. (holes 1, 5, 11 and 6). A difficult exercise is one in which the pupil travels from holes 1 to hole 16 in numerical order. Starting with the arms crossed, the right hand is in hole 1 under the left hand which is in hole 5. From this starting position, the left hand moves to hole 2 which followed by the right hand moves to hole number 3. The pupil then goes to 16, the left hand goes to even numbered holes at all times and the right hand goes to odd numbered holes. If two hands are placed on a single peg, the performer is disqualified in the particular exercise. To get from hole 15 to hole 16, the body may be reversed so that the back is facing the board.

BADMINTON RACQUET

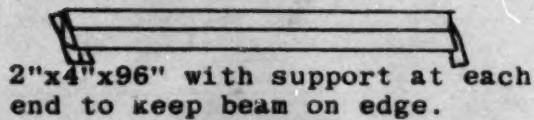
Materials: 3/8 inch plywood. The diagram provides a pattern which may be laid out on plywood and cut. Handle reinforcements are also cut from the same piece of plywood. These should be rounded with a file, sanded and taped with plastic tape. Holes, $\frac{1}{4}$ inch in diameter, are drilled as shown so that there will be less air resistance.

USE: These paddles are used as substitutes for regulation racquets and for teaching lead-up badminton skills.

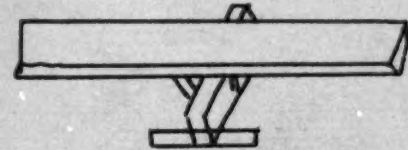


BALANCING

Balance Beam



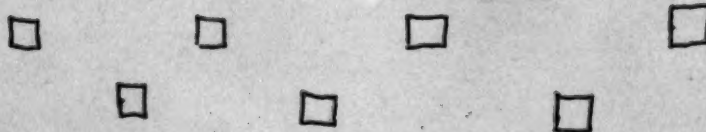
Balancing Teeter Board



Plank for fulcrum

Students balance by standing on ends of plank instead of sitting. Wood cleats keep plank centered on fulcrum.

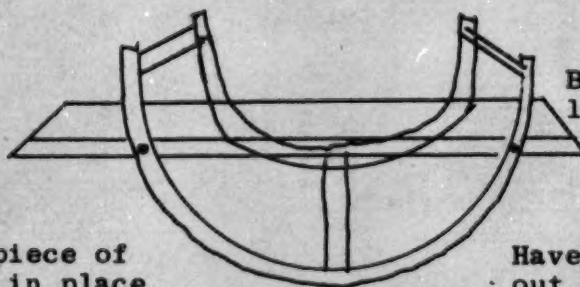
Balancing Pegs



4"x4" posts are set in the ground at varying intervals, extending just above surface of ground (an inch or two). The object is to run the staggered course stepping on the pegs without losing balance. This should be built at the side of the playground where it won't interfere with the game courts.

Classroom Teeter-Totter
for lower grades

Hand-hold (piece of broom handle) 4" above seat

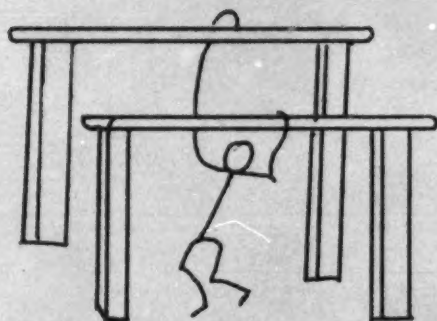


Board 9" wide, 72" long

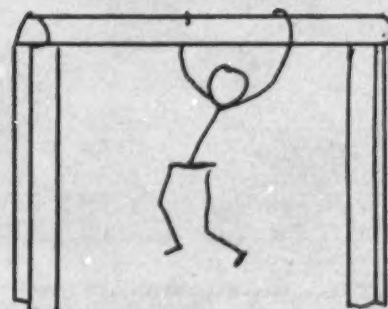
For this brace, use a piece of $\frac{1}{2}$ " pipe 13" long, held in place by $\frac{1}{4}$ " rod.

Have rockers flare out wide for stability

Rim of ash bent in semi-circle (use rim of old wagon wheel if available)

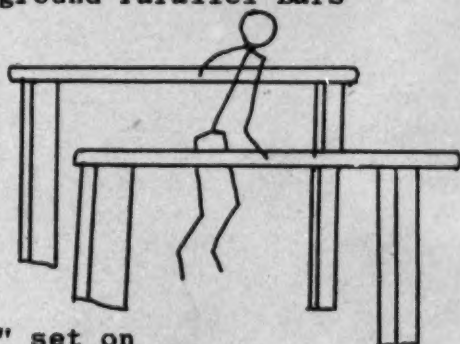


Traveling Parallels

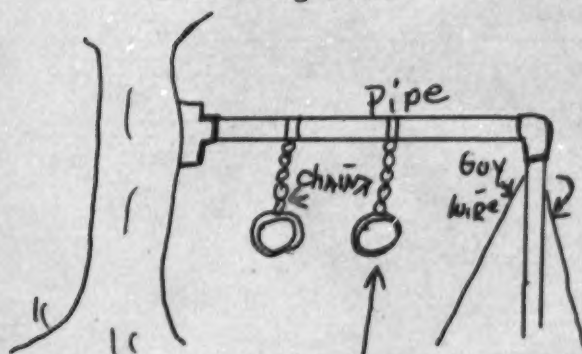


Traveling Pole

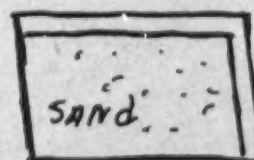
Playground Parallel Bars



2"x4" set on edge and rounded on top. Attach to 4"x4"'s (or regular fence posts) for uprights.

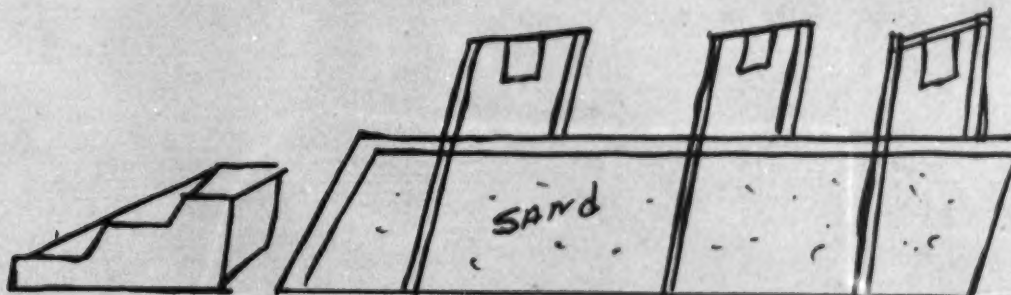


Rings made of conduit for lightness in weight.



Rings should be hung 6 feet from ground so danger from falls will be eliminated.

A trapeze may be hung in similar fashion.



Traveling Trapeze

DECK OR QUOIT TENNIS RINGS

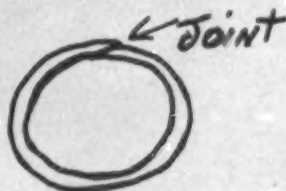
Deck or Quoit tennis is a very popular recreation type net game. It is a game played with a rubber ring that is passed back and forth across a net until a fault is made or a team fails to return the ring. A rubber ring, a net and a court are the only requirements for the game. For this reason, it is a very popular activity in physical education and recreation programs. It is equally popular with boys or girls, young or old.

The main piece of equipment is the ring. Any type of net may be used for the game and an ordinary gymnasium furnishes suitable indoor space while any level play field or tennis court may be used out-of-doors. The ring may be made in the school at practically no expense as follows:

Materials required: 1 ft. 3-ply garden hose. 1 role black friction tape



Hose Before Cutting



Hose After Cutting



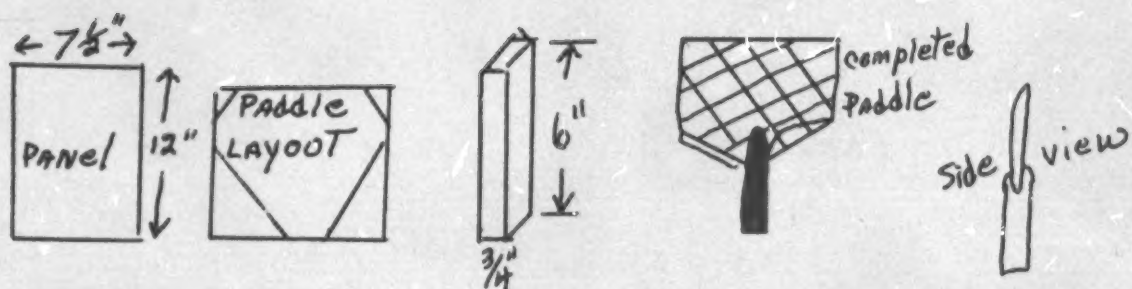
Finished Ring

Construction Suggestions: Cut hose three inches longer than longer than desired diameter of ring. Lay on hard surface and overlap ends three inches. With sharp knife cut diagonally across as illustrated and tape ends together. Ends may be sewed together and then taped if additional strength is needed.

PING PONG PADDLES

All well-rounded physical education and recreation programs include racket games. This group of activities includes: badminton, paddle tennis, tennis, sponge ball, ring or deck tennis and tetherball. Rackets represent the expensive items in these games and thus make it difficult to include this type of game in many programs. Tennis rackets will serve for any of these games where the special equipment is not available, but in many situations even those are not at hand.

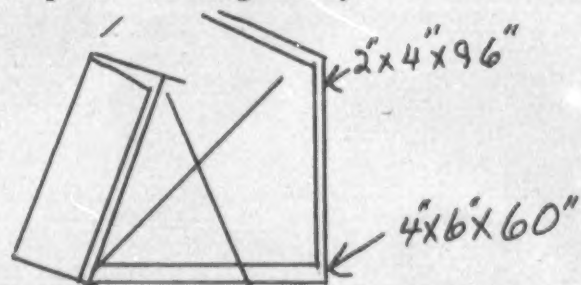
There is no reason for these games to be left out of the program because a very serviceable wooden paddle can be easily and cheaply constructed from plywood in the school shop or by the local lumber mills. Scrap plywood may often be secured, without cost, of sufficient size to make paddles.



Construction Suggestions: Cut plywood as diagrammed above. Slot handles, fit handles to blade of paddle and glue, set with small nails. Let glue set twenty-four hours. Do not make throat of paddle too small or paddle will break at this point. The same general plan may be followed for making paddles of various sizes and weights for other games.

BASKETBALL GOAL SUPPORT FOR CENTER CIRCLE

If made of wood, uprights 2"x4" and braces 2"x2" recommended. In schools having welding equipment, uprights may be made of angle iron, with $\frac{1}{4}$ " rods for bracing, which makes a much lighter framework. When not in use, roll support off floor on piano-moving dolly.



CORK BALL

Equipment: Broomstick bat and cork ball 2" in diameter, covered with cloth or leather.

Players: Pitcher, Catcher, and Batter.

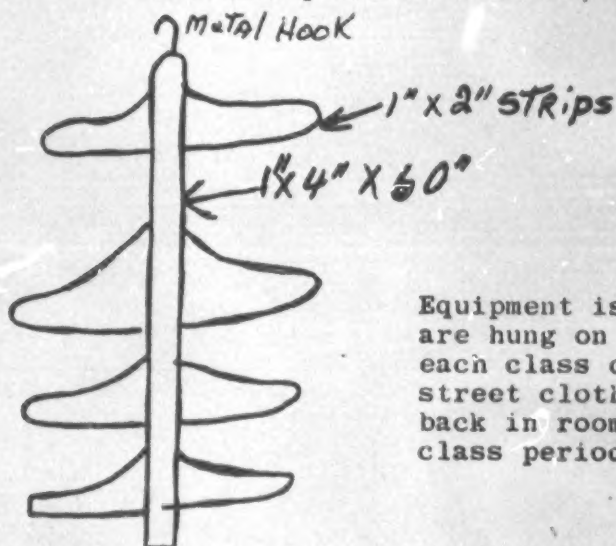
Any ball hit in front of the plate is a run. Batter is out if he swings, misses, and catcher holds ball. Batter may wait for a good ball to swing at. The cork ball, small, light, and easy to curve, is very difficult to hit and cannot be hit far. Three can play it with all the fun of baseball in a small space. Two men on a side is a better game.

Large classes make efficient use of the physical education period by games in the balcony such as:

Shuffle Board courts painted on aisle floors.

Checker boards painted on bleacher seats with sections sawed from broomstick for checkers that won't be stolen.

"THIEF PROOF" CLOTHES RACK
(To take place of lockers, locks, and baskets)

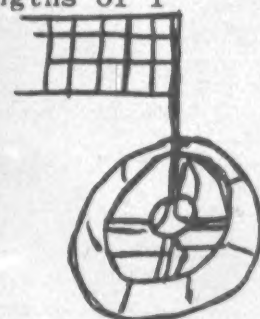
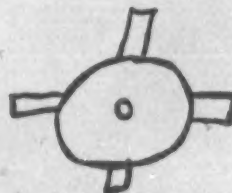
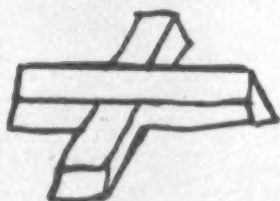


Equipment is placed on the racks and racks are hung on pipes in a small room for each class or squad. Each boy places his street clothes on a rack and hangs it back in room which is kept locked during class period.

NET AND GAME STANDARDS

Net games make up a substantial portion of the physical education and recreation program. Games such as volleyball, badminton, paddle tennis, spongeball and many others require nets. The essentials of a good standard and adaptability for outdoor use as well as indoor use. Four standards of this type may be used for softball backstop.

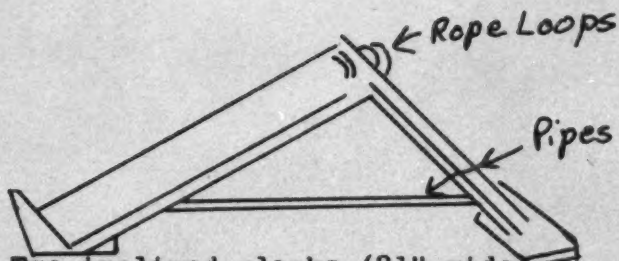
Net standards may be easily made in the school that will satisfy all the above requirements and will, in many ways, prove superior to commercial types. Materials Required: 1 used tire, 16:600 or smaller; 1 set flange unions (2 pieces); 8' of 2"x4" pine, 2-8' lengths of 1" pipe; 8 penny nails; 8 screws.



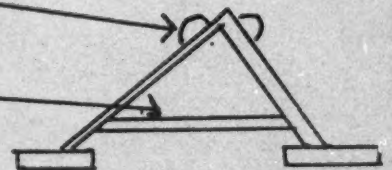
Construction Suggestions: Construct wooden cross in order of numbered parts. Fit each piece tightly. Tire may be nailed holding cross bar in high jump or net.

Net Heights:	Volleyball	8'0" at center
	Badminton	5'0" at center
	Paddle Tennis	2'2" at center
	Ring Tennis	5'8" at posts

MUSCLE BUILDING



Two inclined planks (21" wide) fastened at 90 degree angle with strap hinges. Bars fastened to planks with lag screws to make apparatus quickly demountable for storage.

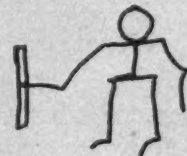


To be used for vigorous sit-ups and leg lifts, anchoring feet (sit-ups) or hands (leg lifts) in rope loops. The bracing pipes may be used for elbow dips and chinning in "half lover" position.

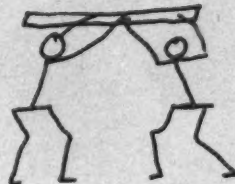
WAND EXERCISES

(Equipment: Two 1" drowels, 36" long. One block of wood 2"x4"x2".)

1. Walk up the wand -- Hold wand in fingers at top: "walk" it straight up to the lower end by use of fingers only.
2. Stick twister -- Bring the wand down but don't permit it to twist in YOUR hands.
3. Wrestle wand away from opponent



4. Wand tug-o-war



5. Jump over wand and back (cane held in both hands)
6. Crawl around wand held in corner of room



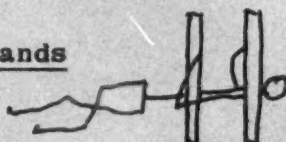
7. Handspring with wand



8. Block of wood between wands at middle -- Bend ends until they touch (number of times)



9. Pull up using two wands



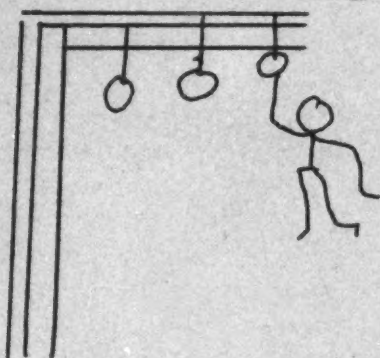
10. Pull up using one wand



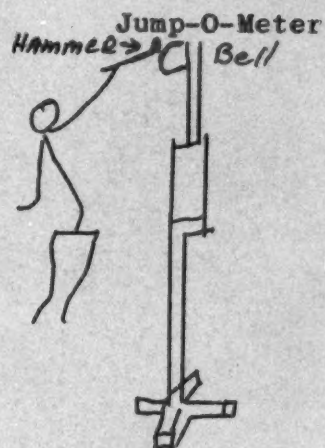
11. Hold wand in both hands in front of body -- Crawl through and pass around body.

JUMPING

Jump and Reach



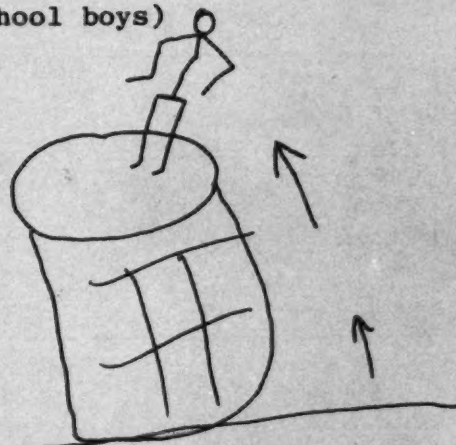
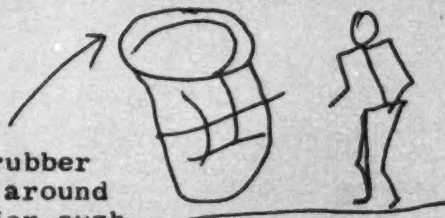
Wooden pegs hung at different, marked heights. Arm may be attached to standard or swung from wall on folding bracket.



- Jump and reach.
- Jump from one foot without use of hands and arms.
- Jump from both feet without use of hands and arms.

Jumping Barrel (high school boys)

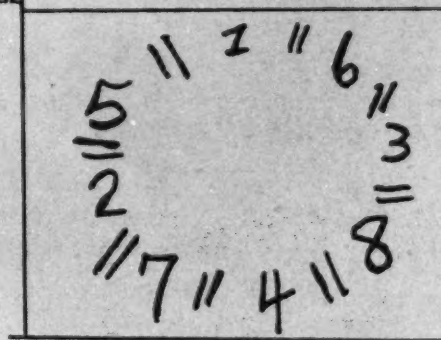
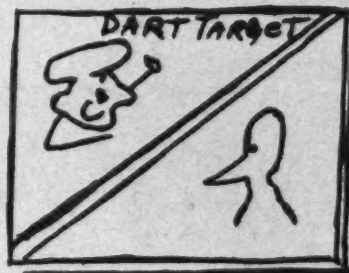
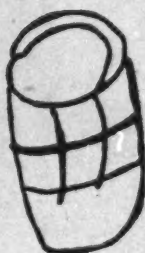
Piece of rubber hose slit around one side for cushioning.



Excellent for basketball jumping practice. The heavier the barrel the better (use sand for ballast.) Barrels of different heights and diameters motivate practice.

- Standing, jump into barrel
- Standing, jump into barrel without use of hands.
- Standing, jump out of barrel.
- Standing, jump out of barrel without use of hands.
- Straddle vault over barrel.
- Head stand on top of barrel.
- Hand stand on top of barrel.

RESTRICTED ACTIVITIES



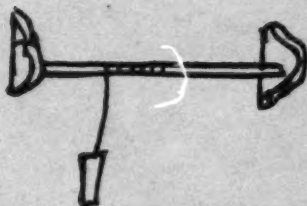
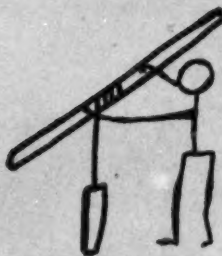
Art classes can make a variety of targets on canvas. Place on celotex.

Materials: Slab of wall board, One picture hook at each number, box of jar rubbers.

Determine the room champion.
Determine the girl champion.
Determine the boy champion.
Make scoring a lesson in arithmetic.

Wrist Twist

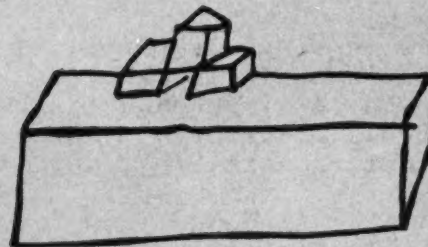
Hold wand at arms length and twist wand to wind up weight. Use stop watch for recording time.



Twist roller, roll up weight, allow to descend slowly, then roll up again. Try for number of times.

Have several on walls, with weights of different sizes.

Baseball Target Throwing

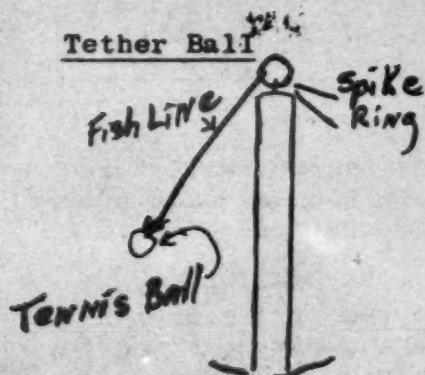


Stand wooden "milk bottles" on box for a target.



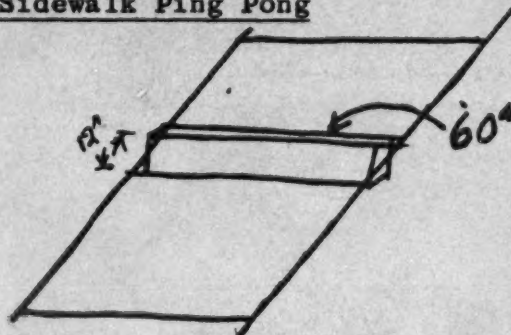
Kicking Barrel

A well-upholstered nail keg makes an excellent kicking barrel for foot juggling. Rug padding is good upholstering material.



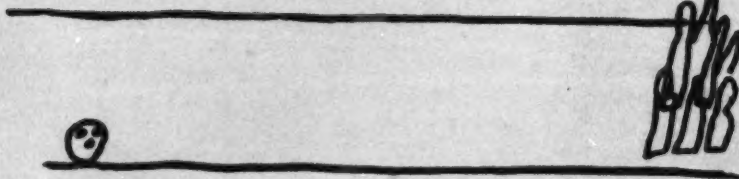
If the ball is placed in the toe of an old stocking and then tied to the line, it is unnecessary to puncture the ball.

Sidewalk Ping Pong



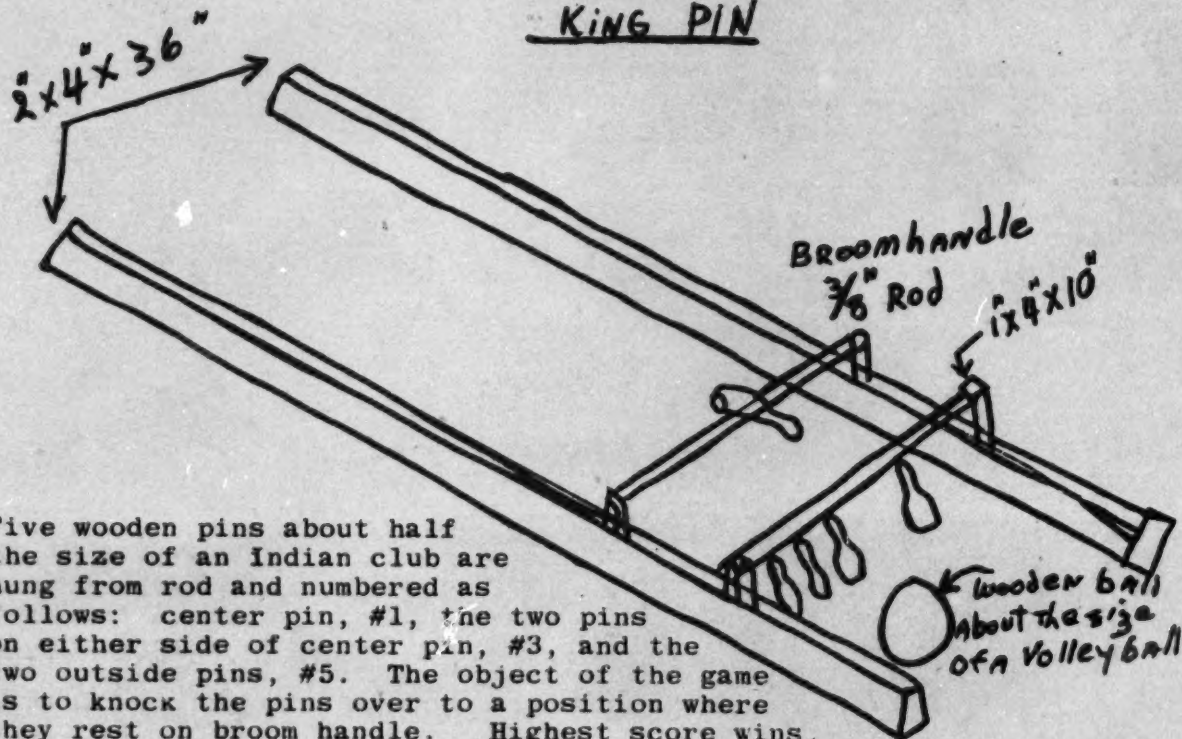
Use ping pong paddles and ball. Use squares on cement and sidewalk for court.

Bowling



Indian clubs, or pins, turned out by school shop. Wooden balls the size of a large softball, turned out on school shop lathe. Lay out the "alley" in balcony of gym, foyer, or hall.

KING PIN

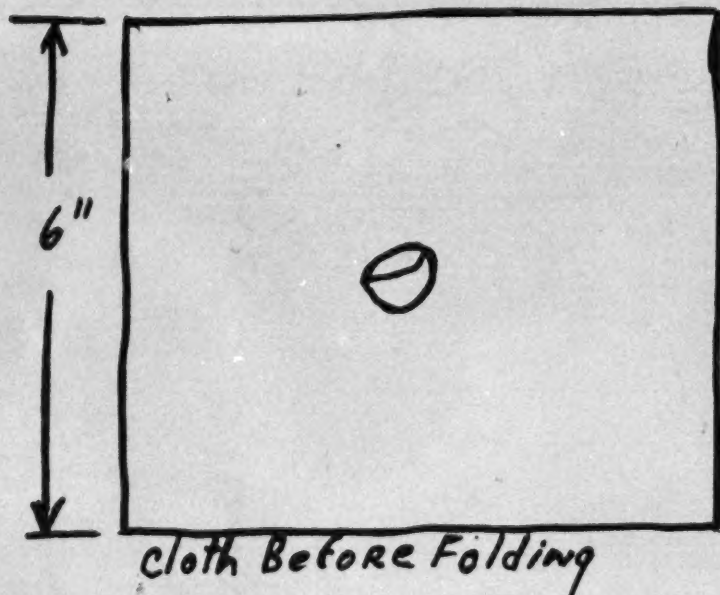
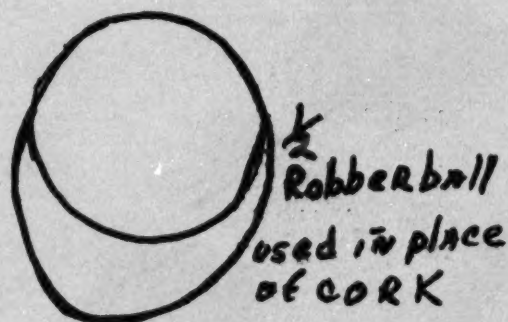
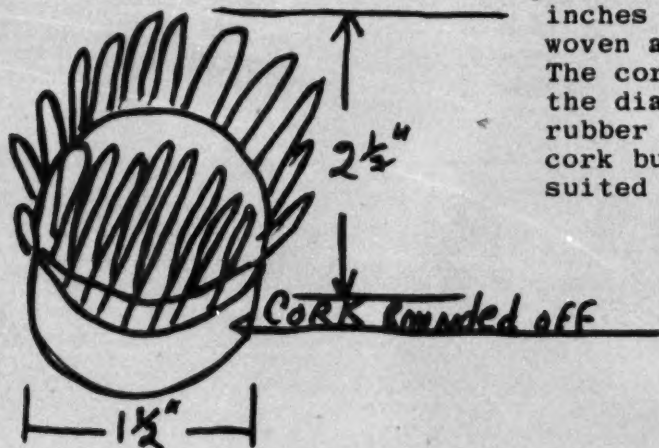


Five wooden pins about half the size of an Indian club are hung from rod and numbered as follows: center pin, #1, the two pins on either side of center pin, #3, and the two outside pins, #5. The object of the game is to knock the pins over to a position where they rest on broom handle. Highest score wins. This game can be set up quickly in the balcony or hallway.

Homemade Shuttlecocks: Materials: $1\frac{1}{2}$ inch corks, 10 to 15 chicken or turkey feathers for each shuttlecock, Jackstone balls, cloth.

Construction: A. Chicken feather shuttlecock. The quills are trimmed clean one inch from the bottom. Openings are made with a thin nail and the feathers are inserted with glue. They should be approximately $2\frac{1}{2}$

inches tall. Strong fine thread is woven around the base of the quills. The corks may be rounded as shown in the diagram if desired. A small rubber ball may be substituted for a cork but it is more lively and best suited for outdoor play.

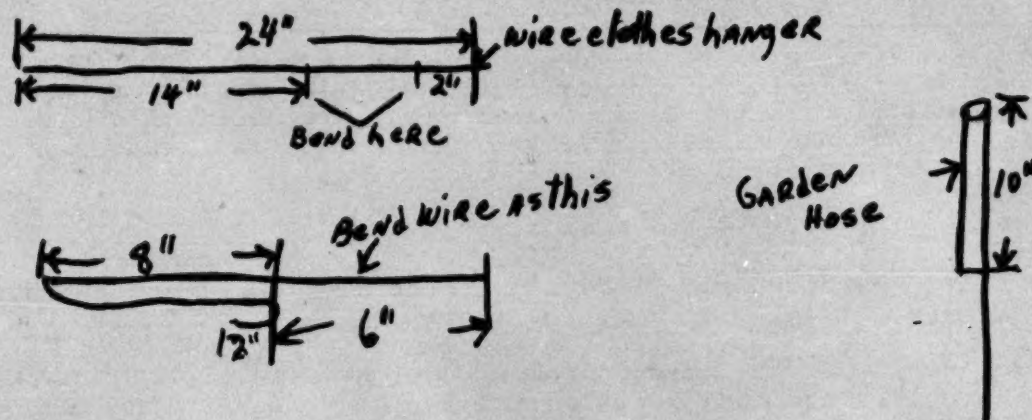


An All-Purpose Marker

Material: 10 inch length of rubber garden hose, coat hanger wire.

Construction: See Diagram. The tip of the wire should be sharpened to a point so it may be easily inserted into the ground.

Use: These markers are used out-of-doors to mark the limits for many different games. A piece of white towel or cloth may be added to marker so that it could be seen more easily.

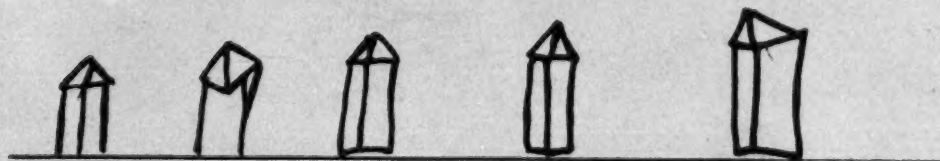


Milk Carton Markers

Materials: Milk carton, sand and paint.

How to make: The milk cartons are partially filled with sand for weight and then are painted bright colors.

Use: The cartons are used for temporarily marking off game areas, as relay markers or in testing.



Homemade Awards

Materials: Old sport equipment such as tennis balls, golf balls, table tennis racquets, etc.; silver or aluminum paint.

How to make: Items of old sports equipment are mounted in novel ways and are painted with silver, gold, or aluminum paint. Aerosol spray paints to a quick, neat job. When dry, an inscription may be added.

Use: Homemade awards may be made by students which are then presented to other students for some outstanding individual accomplishment in physical education. In many instances, awards of this type have been more enthusiastically received than commercial counterpart.

Homemade Track Starter

Materials: Hardwood block, 2x4x11 inches, two small strap hinges or one large one.

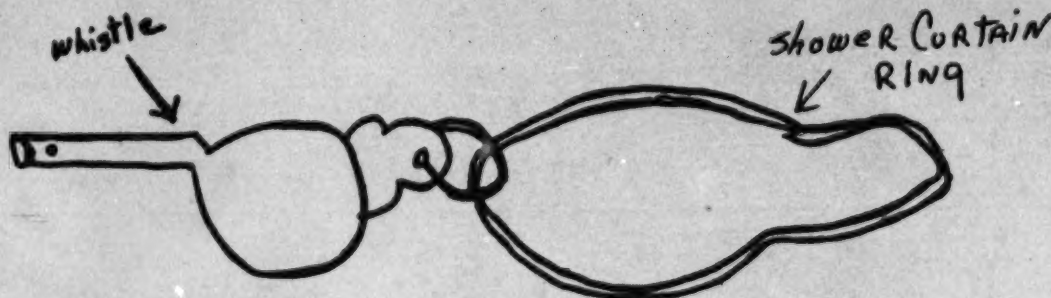
How to make: Cut two hardwood blocks to the size above. Notch out small pieces at one end, screw on the hinges to fasten the two blocks together.

Use: Holding the blocks, one in each hand, bring them together quickly so that they hit. The resulting sound is much like a gun.

Whistle Holder

A shower curtain ring.

Use: The ring is used to hold the whistle. When not in use, the ring may be fastened to belt loop at side.



Storage Chests

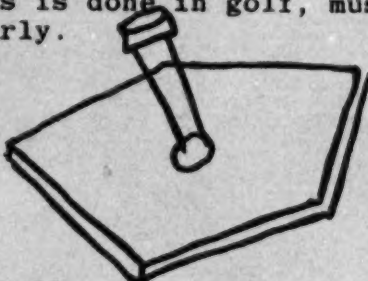
Surplus Army foot lockers can be used to store physical education equipment and athletic uniforms.

Batting Tee

Material: Plywood home plate, flange, length of pipe, piece of broom handle and piece of radiator hose.

How to make: The flange is secured to the center of the wooden plate with screws. A length of pipe is screwed to the flange. It need be only a foot long. Into this pipe is placed a length of broom handle which is tapped into the side of the pipe. On the end of the stick is placed a piece of radiator hose which is one foot long. The hose should be selected to fit the broom stick. If not a perfect fit, either sand down the end of the stick or wrap it with tape to give it a larger diameter.

Use: This is used to practice batting the softball. It may also be substituted for a pitcher in certain games. If used in place of pitcher, a person should stand where the pitcher does and go through the motion of pitching. The batter is instructed to attempt to visualize a ball coming to the plate and then swing at the end of the tee. When a tee is used, the bat must be held back of the batter's ear. "Teeing Up" as is done in golf, must not be permitted if the tee is to be used properly.



Ropes for Flag Football

Material: Clothes line, window sash or cloth in 24 inch lengths.

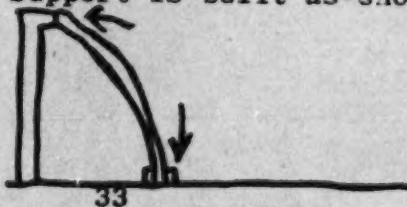
Construction: The flag is knotted approximately 3 inches from the end. The knot is slipped under the belt of the player. (one on each hip) The long end hangs down.

Use: The ropes are used in flag football, a game in which the defensive team attempts to snatch a flag of an offensive player rather than tackle him.

Pipe Frame for Soccer Goal Net

Material: 1 inch galvanized pipe and flanges.

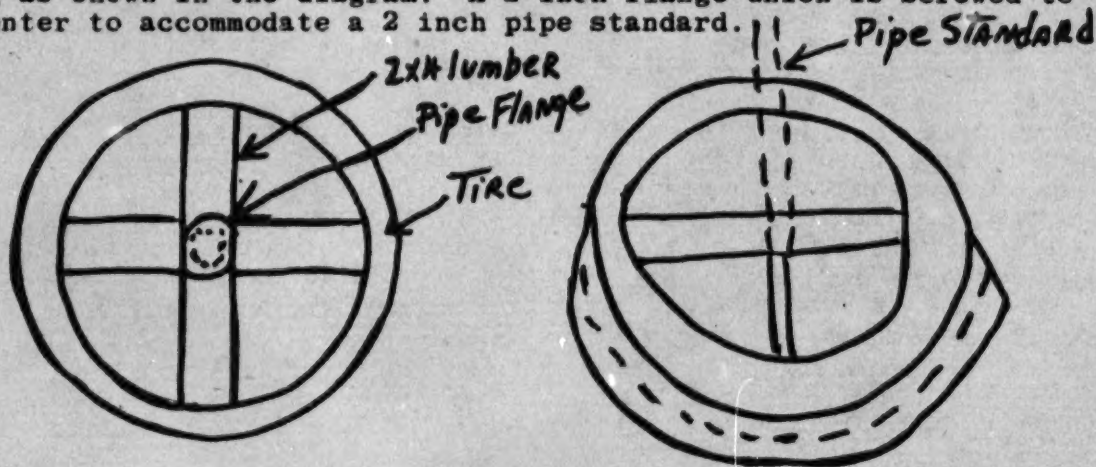
Construction: A net support is built as shown in the diagram.



Wood Reinforced Auto Tire Standard

Material: Auto tire casings (no larger than 600x16) one set flange unions, 8 foot length of 2x4 lumber or 4x4 may be used, two 8 foot lengths of 2 inch O. D. pipe.

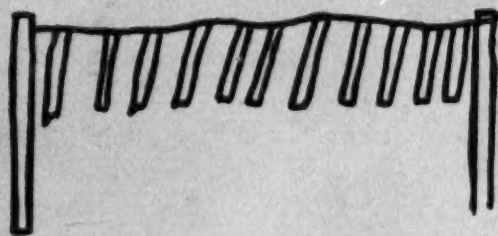
How to make: Two pieces of lumber are cut and nailed to the tire casing as shown in the diagram. A 2 inch flange union is screwed to the center to accommodate a 2 inch pipe standard.



Improvised Net for Volleyball or Badminton

Material: Strips of cloth, rope or crepe paper each 2 to 3 feet long.

How to make: Strips of cloth are hung at 2 to 3 inch intervals on a rope spanning the required distance.

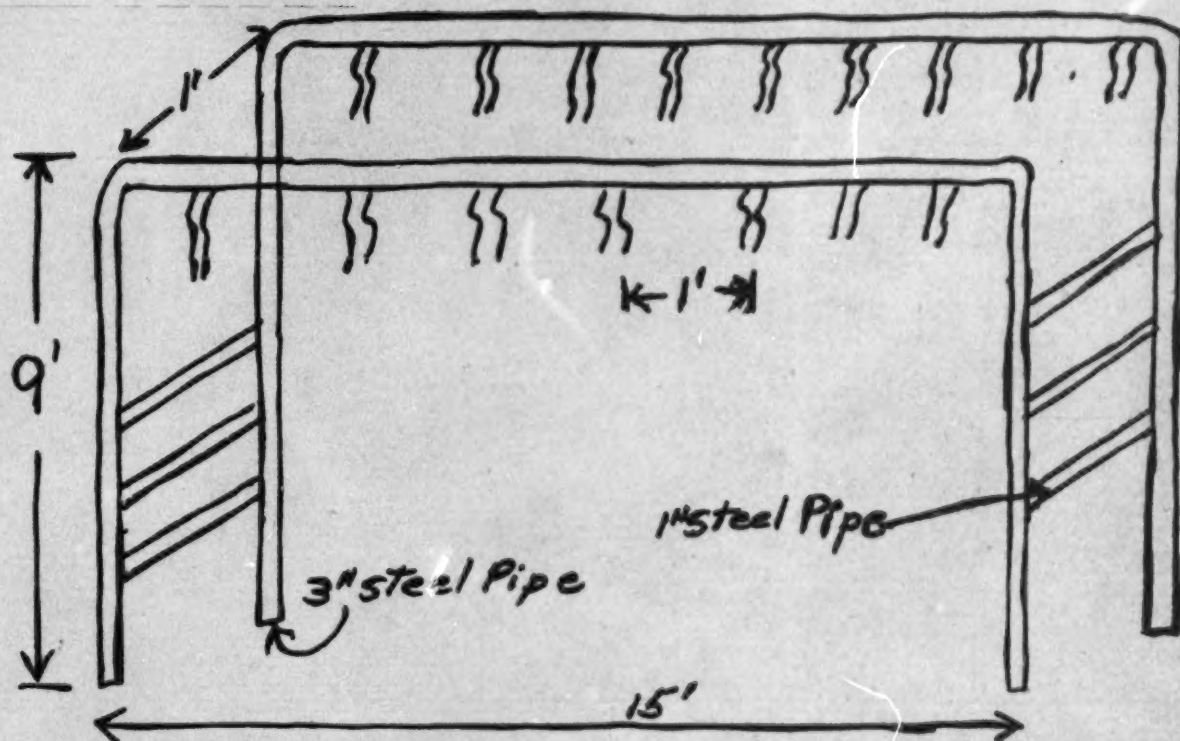


Batting Tee

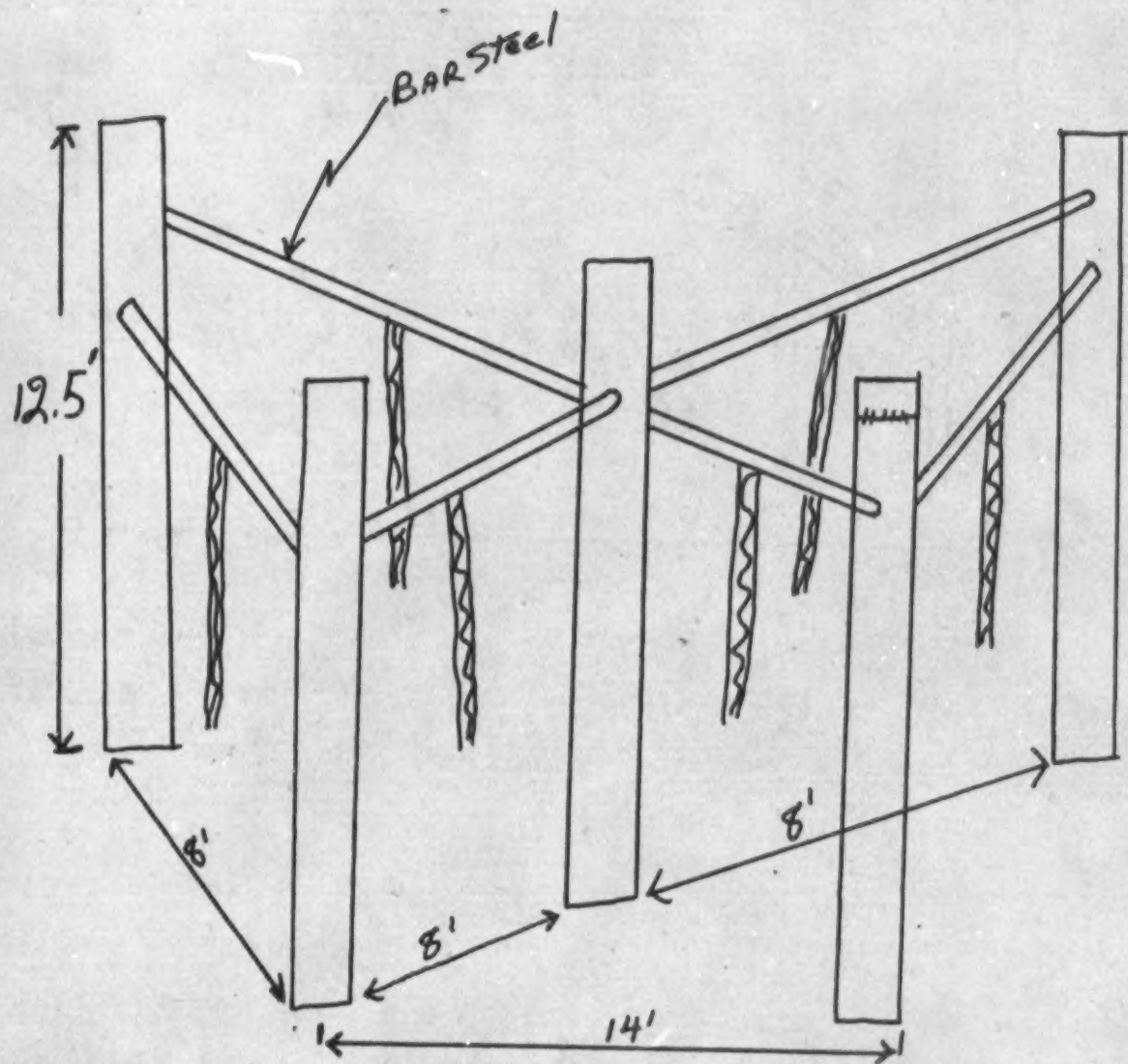
Materials: A bucket, a piece of broom handle, rubber hose and sand.

How to make: Into a bucket of sand a stick is placed with a rubber hose attached to one end.

Rope WALK

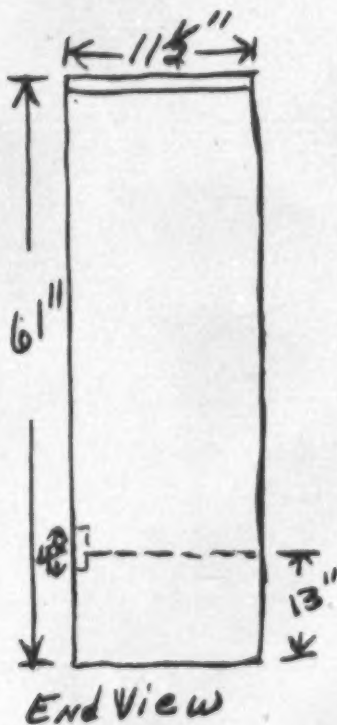
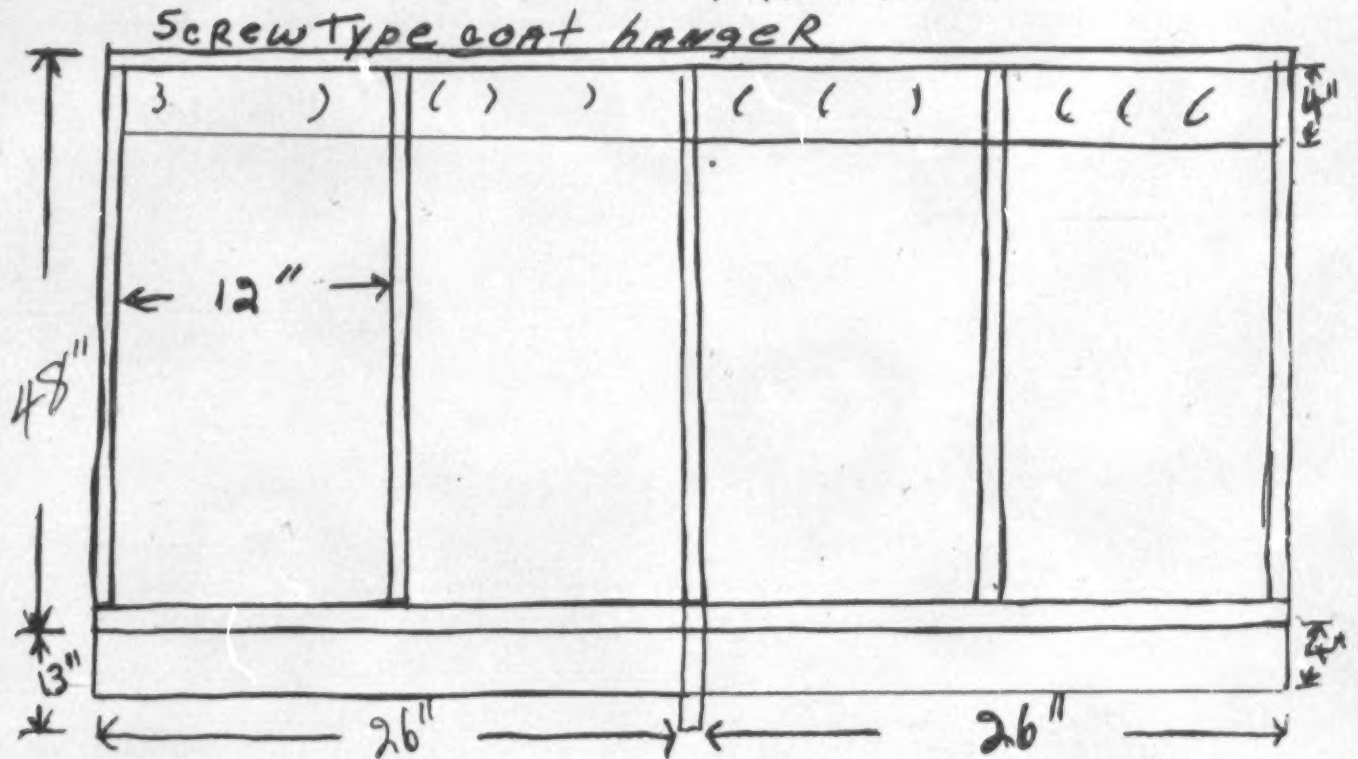


ROPES



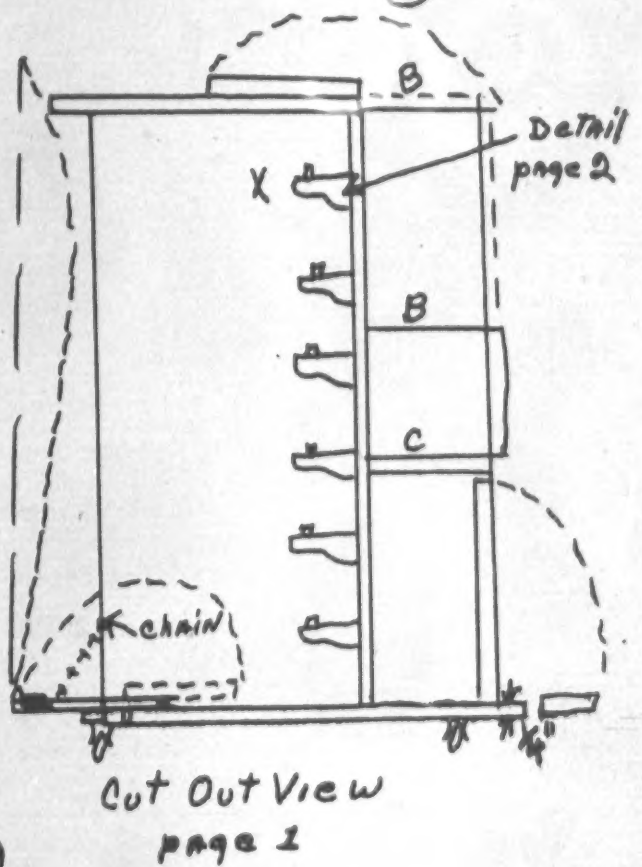
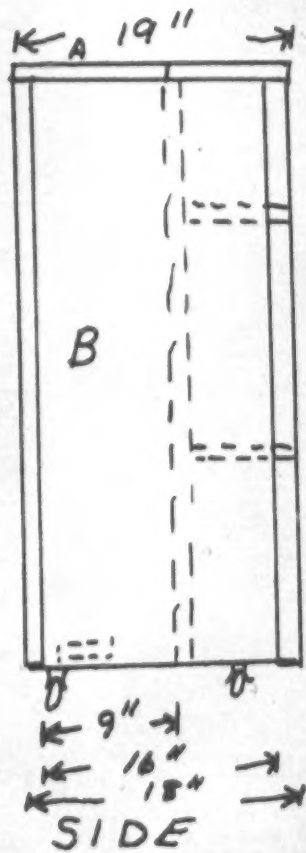
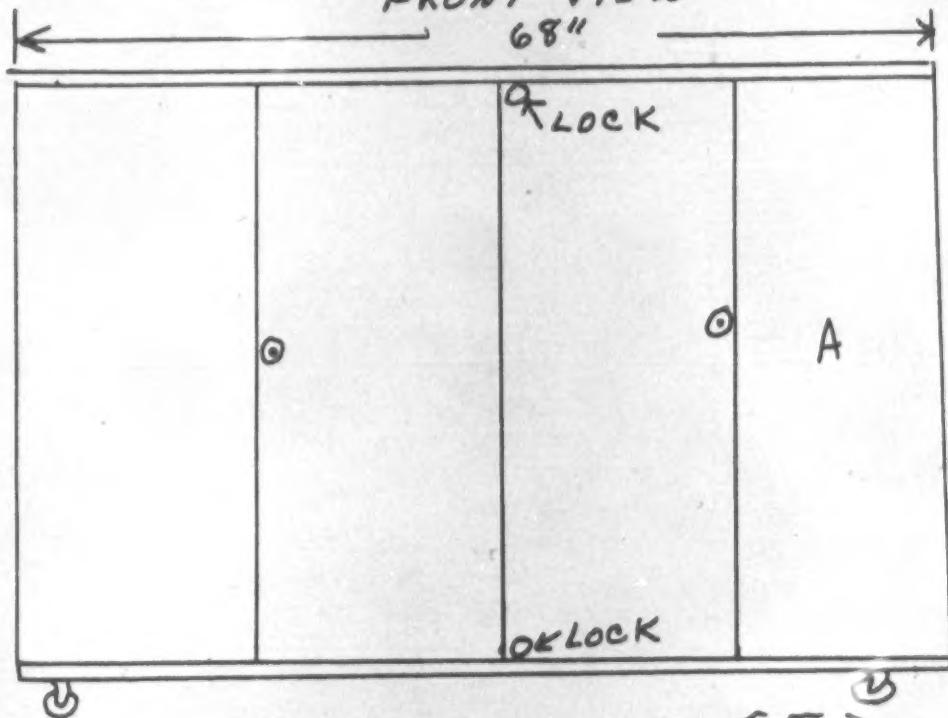
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WOODEN LOCKERS FRONT VIEW

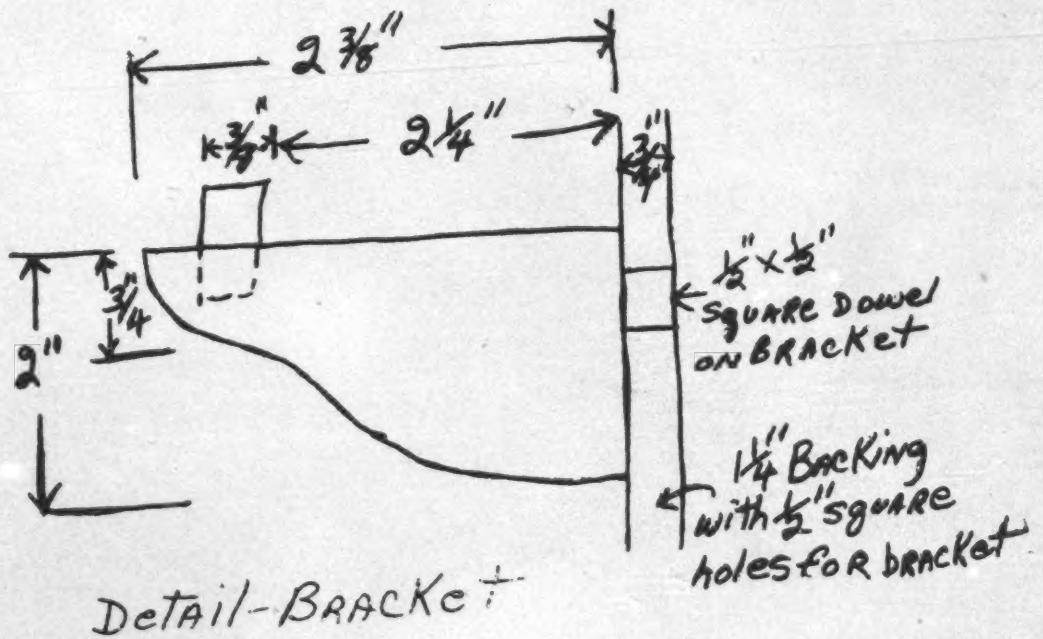
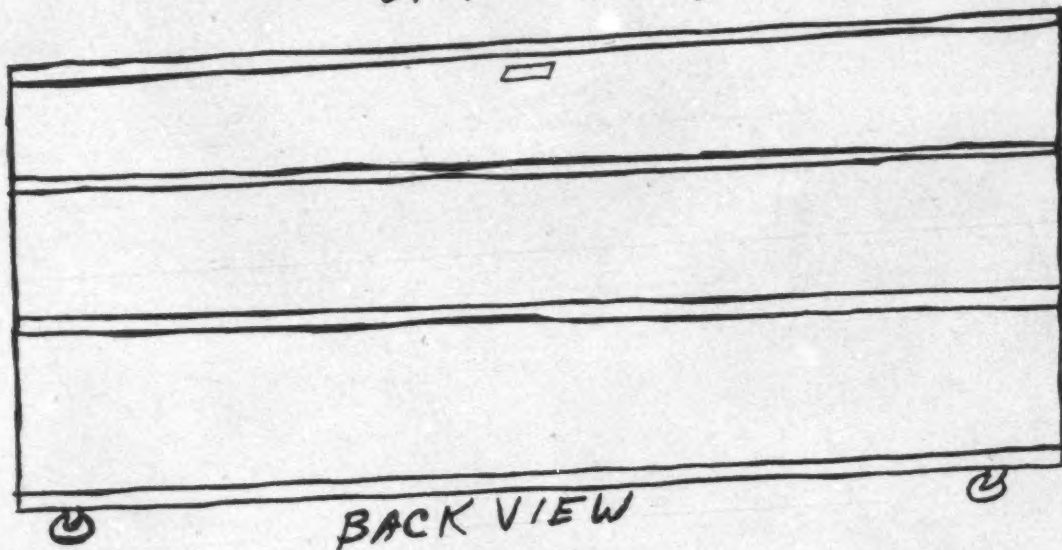


There is no need for a back
If a bench is added, it should
be at least 15" high.
Doors are not included.

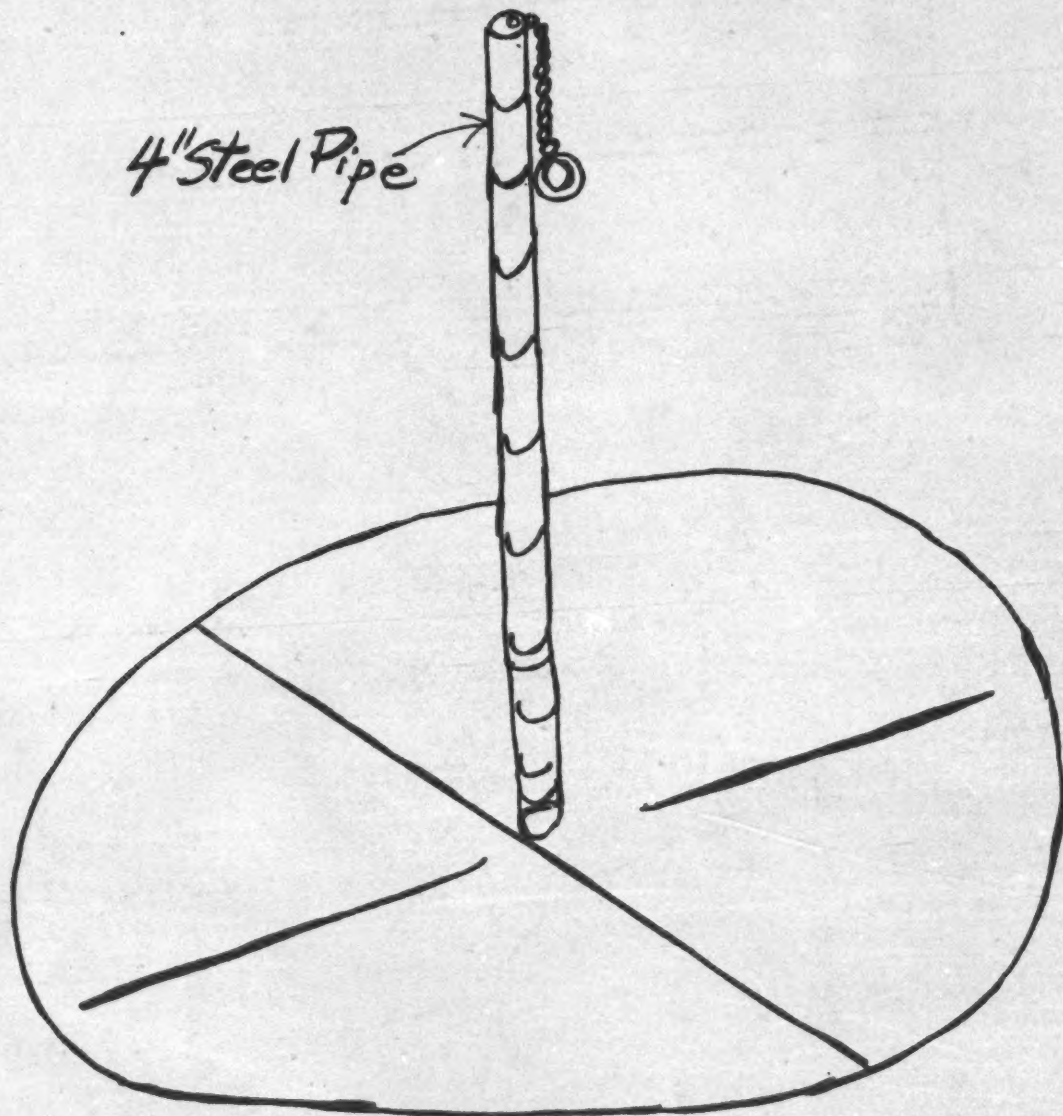
BOW AND ARROW CART FRONT VIEW



CART PAGE 2 - OF 2 PAGES

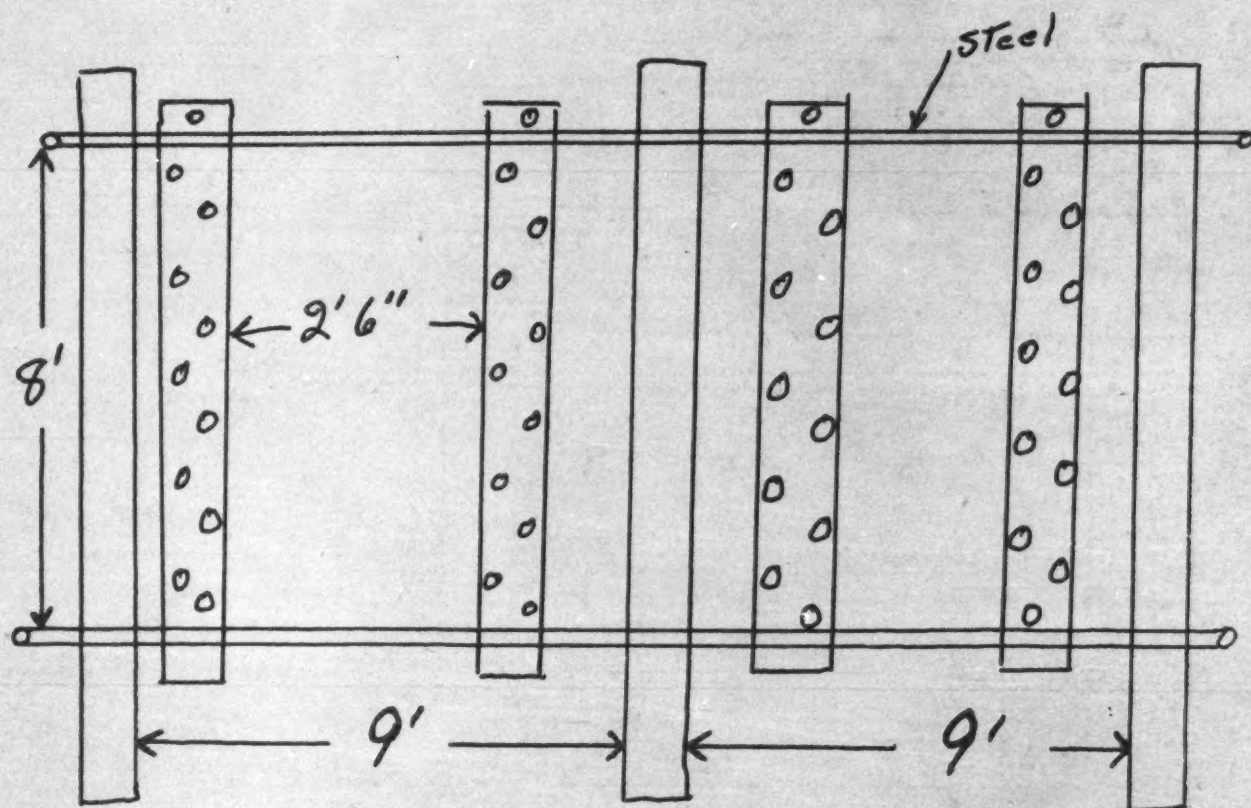


TETHER BALL COURT

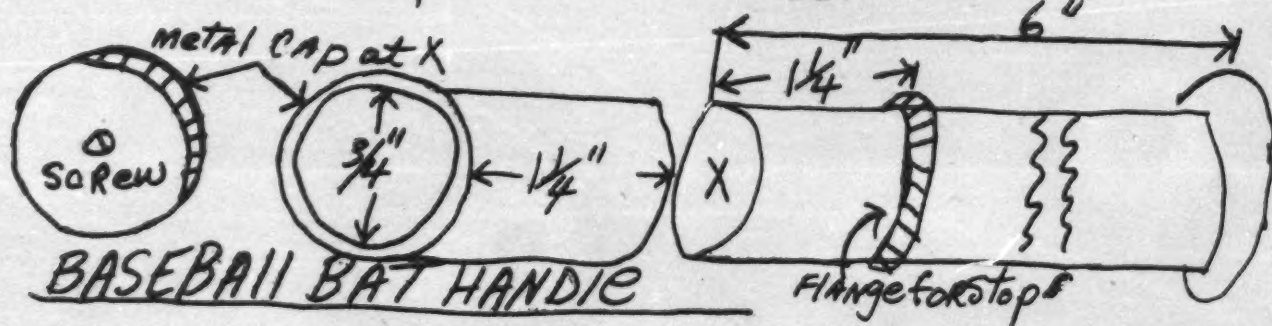
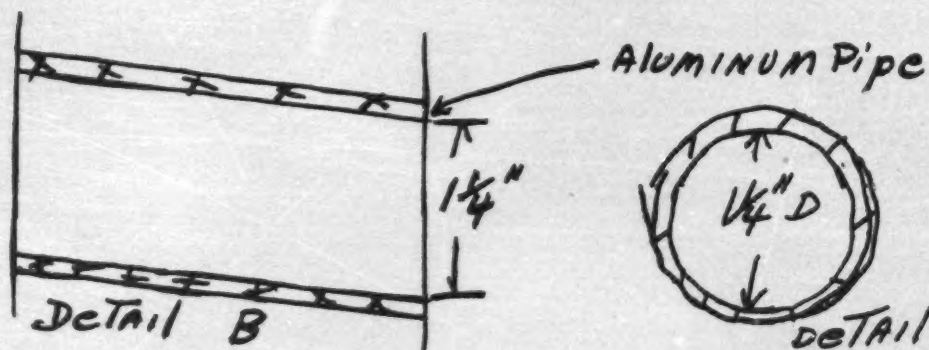
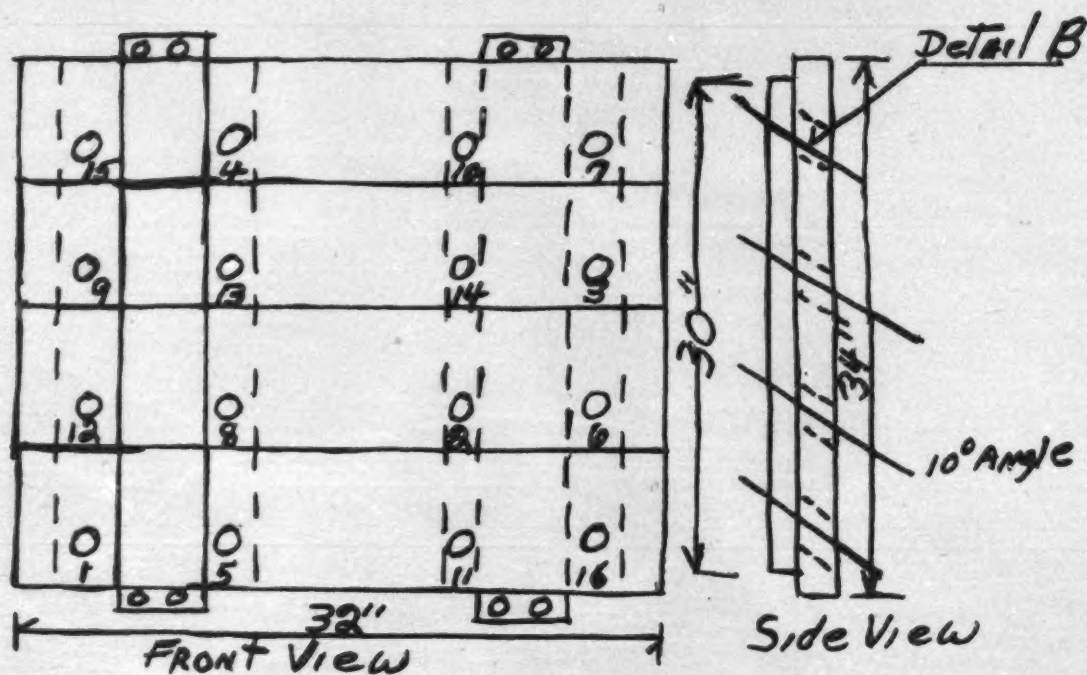
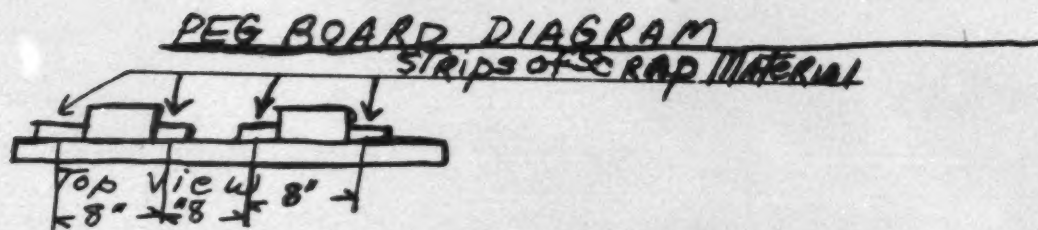


Concrete Circle 12' Diameter

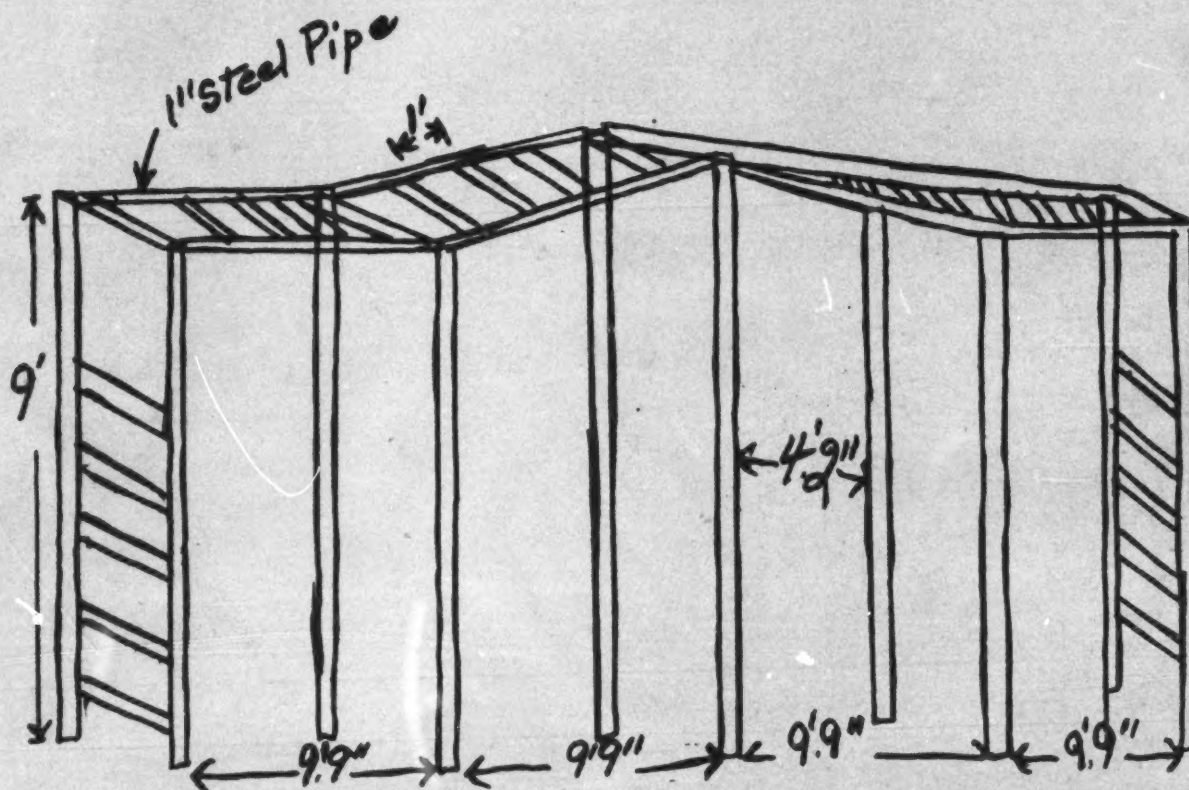
PEG CLIMBER



Boards — 12" x 2" x 9'

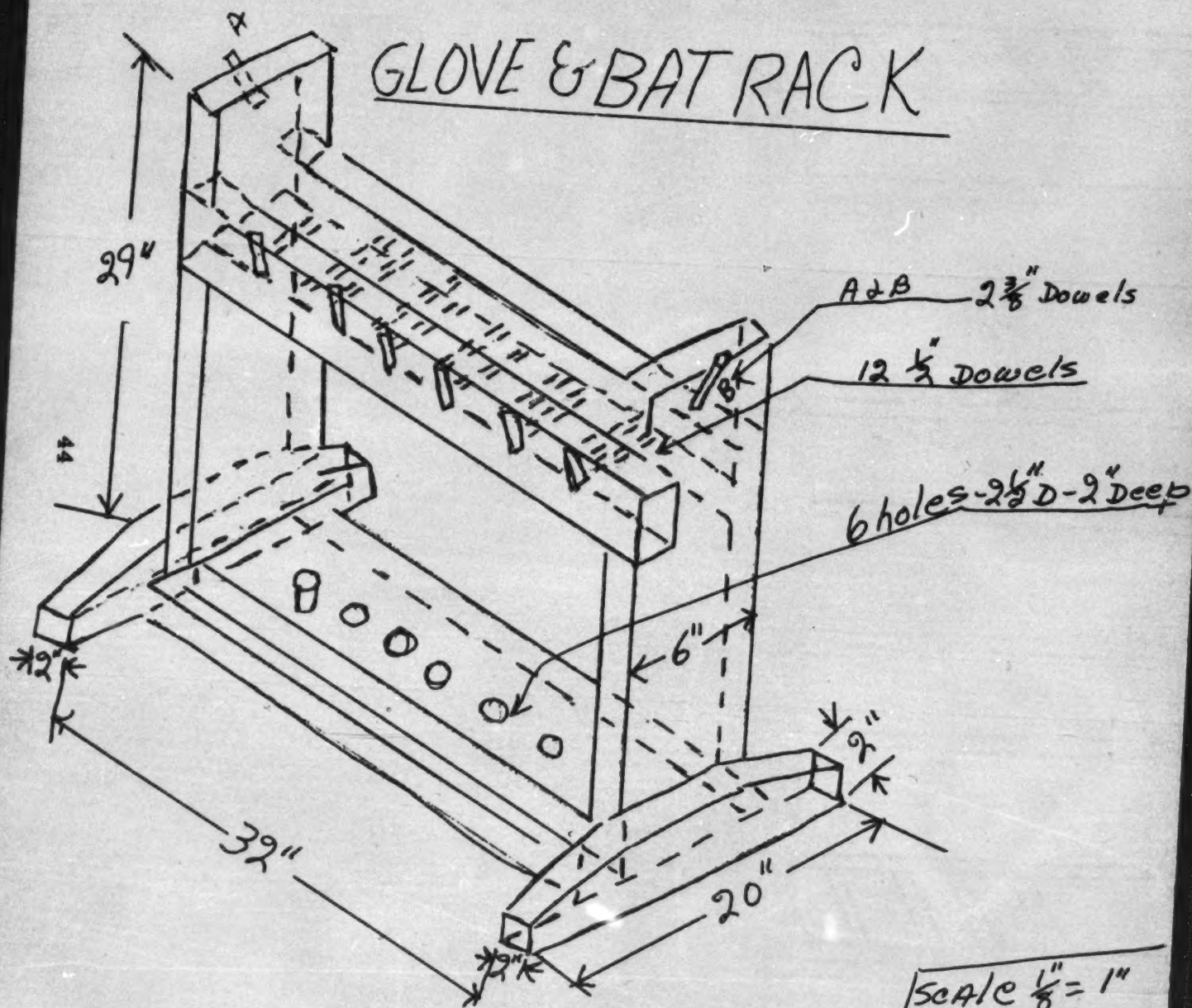


HORIZONTAL LADDER



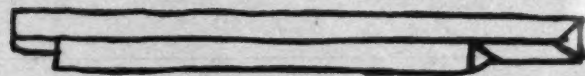
CONSTRUCTED OF 3" DIAMETER STEEL PIPE

GLOVE & BAT RACK



Scale 1/8" = 1"

The beam should be painted both to prevent splinters and to protect the materials when the beam is used out of doors. If possible there should be one beam for every 15 students in the largest physical education class.



Beam = 4" x 4" x 14'



BALANCE BEAM

GRADES 1, 2, 3, 4, 5 + 6.

 END VIEW OF BEAM

Cut Appx. 60° Same as Slope of Brace Dotted Lines Indicate Stand the Way it Will be Used

